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B-GL-392-005/FP-001

TRAINING

SNIPING

(ENGLISH)

(This publication is effective upon receipt.)

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Issued on Authority of the Chief of the Land Staff

Canada

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FOREWORD

1. B-GL-392-005/FP-001, *Sniping* is issued on authority of the Chief of the Land Staff.

2. This publication becomes effective upon receipt.

3. Unless otherwise noted masculine pronouns apply to both men and women.

4. The NDID for the French version of this publication is B-GL-392-005/FP-002.

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BACKGROUND

1. The word sniper originated in the eighteenth century with the British Army in India, where the snipe was a favourite hunter's game bird. The bird was small and fast so a successful snipe hunter had to be an expert shot as well as a skilled hunter. The term sniper therefore came to signify a person who possessed all the skills of a successful snipe hunter.

2. Since that time the sniper has proven to be a valuable asset and a force multiplier during all types and scales of operations. The sniper's value is based not only on the ability to deliver long-range precision fire, but also the ability to observe and report.

3. An examination of the art of sniping will show that it is solely an extension of all the natural infantry skills, each developed to the highest standard. However, while the object of sniper training must be to produce snipers, sniper training in any infantry unit will inevitably raise the marksmanship standard of all concerned.

4. To gain maximum benefit, sniper training should be concentrated within a unit in order to produce the best possible results in the training time available. Sniping is a perishable skill with an understandably high standard, and because of this more time and individual attention is required than during normal infantry training.

5. Experience has demonstrated a continuing requirement for a sniper capability, and commanders at all levels must understand that there is never an end to a sniper's training. After basic instruction snipers should continue to maintain the standard that has been achieved, and should then seek to improve that standard at all times.

DEFINITION

6. The sniper is a highly skilled infantryman who can select and occupy an advantageous position, stay there for extended periods of time under difficult conditions, and kill selected enemy or destroy critical equipment at long ranges with rifle fire.

ROLE

7. The role of the sniper is to defeat the enemy by delivering long range precise rifle fire by day and night, in all weather conditions, and in all operations of war, systematically destroying the enemy and reducing his will to fight. A secondary role of the sniper is to gather combat intelligence and acquire targets, and/or designate them, for engagement by supporting arms.

AIM

8. This manual provides a guide for the employment and training of the sniper in all operations of war across the spectrum of conflict.

SCOPE

9. This manual contains all the information and references necessary for the employment of snipers. Although some specific training considerations have been included in this publication, a more thorough examination of training is addressed in the supporting publication; B-GL-392-005/FP-003 *Part 2 Training The Sniper*.

TERMINOLOGY

10. The following definitions apply:

a. **Assist**. Help someone to perform the task.

b. **Casualty-Zone Hit**. Any hit on a man-sized target outside of the kill zone.

c. **Conduct**. Supervise and personally perform work necessary to accomplish the result desired. (To perform does not imply management).

d. **Control**. Check or regulate, keep within limits; exercise direction, guide or retain power over.

e. **Critical Error**. Any error that jeopardizes the successful completion of the task.

f. **Demonstrate**. An oral explanation combined with physical performance.

g. **Describe**. To set forth in words, recite characteristics, give a description.

h. **Detection**. An observer identifies, positively, a member during stalking.

i. **Effectively**. Perform a function in a manner which indicates success with regard to all the factors available which can be assessed.

j. **Explain**. To make known in detail, to make one's meaning clear, to give an account, either in writing or orally.

k. **Identify**. A sniper's ability to indicate correctly, by stating colour, action, number or name; or to apply fire accurately to a designated target during a stalk.

l. **Kill Zone Hit**. Any hit in the vulnerable area of a man-sized target, depicted as an area centred on a Figure 11 or 12 target with the following dimensions: 15 cm wide by 15 cm high, representing the head, and 30 cm wide by 33 cm. high (on a

Figure 12 target), or 30 cm wide by 38 cm high (on a Figure 11 target), representing the chest.

m. **LRSW**. Long Range Sniper Weapon.

n. **MRSW**. Medium Range Sniper Weapon.

o. **Perform**. Carry into effect or execute a command, task, operation, etc.

p. **Recently**. Within the environmental season that the course is to be conducted.

q. **Sniper Detachment**. A sniper detachment consists of 4 snipers.

r. **Sniper Team (Pair)**. A sniper team (pair) consists of 2 snipers.

s. **Successfully**. Perform a function in a manner that indicates accomplishment of the stated aim.

SECTION 2
SELECTION OF PERSONNEL

GENERAL

11. Candidates for sniper training must be carefully screened. The rigorous training program and the great personal risk in combat requires high motivation and the ability to learn a variety of skills. The unit Master Sniper must determine and assess the potential aptitude of aspiring snipers. Master Snipers should screen and select candidates using the Format at Annex A.

REQUIREMENTS

12. Candidates shall be qualified Basic Reconnaissance Patrolman and meet the following prerequisites prior to acceptance into the sniper program:

a. **Marksmanship**. A high standard of marksmanship is essential since other skills associated with snipers are such that they demand a large proportion of the training time. Sniper students must be qualified Marksman on the service rifle Personal Weapon Test (PWT) within six months prior to the start of the course Experience as a competitive marksman will often assist the potential sniper during training.

b. **Physical Condition**. The sniper, often employed in extended operations with very little sleep, food, or water, must be in outstanding physical condition. Good health means good reflexes, good muscular control, and good stamina. Self-confidence and self-control, which come from participation in athletics, especially team sports, are definite assets for a sniper. Snipers should also have no record of drug or alcohol abuse.

c. **Emotional Balance and Mental Condition**. An infantryman in the heat of battle kills an enemy emotionally and instinctively, as a matter of survival. However, a sniper must kill calmly and deliberately, shooting carefully selected targets. He must not be susceptible to feelings of anxiety or remorse. A candidate whose sole motivation towards sniper training rests mainly in the desire for prestige from performing a unique function may not be capable of the cold rationale thought which the sniper's job requires. A proper mental condition cannot be taught or instilled by training. An emotionally stable personal life, combined with patience, attentiveness and perseverance, will greatly assist the sniper in functioning effectively under stress.

d. **Intelligence**. A sniper's duties require a wide variety of skills. He must learn, for example, ballistics, ammunition types and capabilities, adjustment of optical devices, radio operation and procedures, observation and adjustment of artillery fire, map and compass reading, and military intelligence collecting and reporting. In sniper operations involving prolonged independent employment, the sniper must display decisiveness, self-reliance, good judgement, and common sense. Applicants must possess the ability to make situational assessments and mental calculations rapidly and accurately.

e. **Fieldcraft**. The sniper must be familiar with and comfortable in any field environment. An extensive background in the outdoors, such as experience as a hunter or woodsman, and knowledge of natural occurrences in the outdoors, will assist the sniper in many of his tasks. Furthermore the potential sniper must possess the ability to work closely with another individual in confined spaces or to work alone for extended periods.

PREFERRED QUALITIES

13. **Preferred personal characteristics include the following**:

a. **Glasses/Contact Lenses**. Eyesight is the sniper's prime tool and he can be rendered helpless by losing or damaging glasses or contact lenses. Glasses are a liability to a sniper. Although many expert riflemen wear them, glasses reflecting light can betray a sniper's position. Contact lenses are potentially unsuitable for sniper operations as they require daily hygienic maintenance, which would seldom be possible due to the poor sanitary conditions often experienced by a sniper during operations.

b. **Smoking**. A sniper should be a non-smoker. Smoke or an unsuppressed smoker's cough can betray the sniper's position, and even though he may not smoke while on a mission, abstention may cause nervousness and irritability which lowers efficiency.

c. **Left-handedness**. Unless highly qualified, a sniper should not be a left-handed rifle shot.

14. **Critical Personnel Selection Notes**:

a. Candidates should not be apprised of their status during selection.

b. Non-volunteers should not be considered.

c. The best qualified candidates should be selected for training. Alternate and future candidates must also be identified.

SECTION 3
THE SNIPER PLATOON

GENERAL

15. For ease of administration and training, the sniper platoon forms part of an infantry unit's Combat Support Company. The commanding officer or operations officer of a unit will allot tasks directly to the sniper platoon.

WEAPON SYSTEMS

16. In order to accomplish the above tasks, snipers are equipped with various weapon systems capable of engaging both personnel and destroying tactically vital battlefield equipment with a minimum risk of collateral damage. (**"***System***"** denotes a trained sniper as the operator, utilizing the equipment issued).

a. **Long Range Sniper Weapon System (LRSWS)**. The LRSWS will provide commanders with a capability for surgical single round destruction of command vehicles, light reconnaissance vehicles, observation posts, logistic vehicles, indirect fire systems as well as heavy weapon systems, and other critical equipment that is typically well guarded and difficult to approach. The scale of issue will be four LRSWs per unit.

b. **Medium Range Sniper Weapon System (MRSWS)**. The MRSWS will be capable of killing the enemy equipped with ballistic/ceramic body armour at ranges beyond those of normal small arms with precision accuracy.

c. **Short Range Sniper Weapon System (SRSW)**. The SRSW will allow for long range precision accuracy out to 800 metres. The semi-automatic capability of this weapon will provide the sniper the ability to engage targets rapidly in an urban environment.

ORGANIZATION

17. In all establishments the sniper group commander (usually a Warrant Officer) should be designated as the Unit Master Sniper, and is responsible for advising the commanding officer

and the operations officer on all matters related to sniping, including counter-sniping. Prior to undertaking tactical missions, the Master Sniper will receive the commander's intent and concept of operations. From this, he will conduct a mission analysis and estimate in order to develop a plan for employing the snipers. Once the commander has approved this plan, the Master Sniper will issue his orders to the deploying detachments/teams. The Unit Master Sniper will then conduct the necessary coordination in order to make the plan work. Special consideration must be given to coordination that will protect the snipers from friendly direct and indirect fire. Normally located at the battalion command post, the Master Sniper will monitor and direct snipers employed at battalion level, updating information both up and down. During the battle, he will continuously conduct a mission analysis and anticipate tasks. Depending upon the tactical situation and the deployment of the sniper detachments, the Master Sniper may also have to provide or coordinate temporary radio rebroadcast for the snipers.

18. Detached snipers will advise, coordinate and receive direction from the sub unit or element to which they are attached. Particular attention must be given to ensuring the safety of the snipers by informing forces of the location of those vulnerable to friendly fire. After the battle, the Master Sniper will coordinate the re-supply of snipers by nearby friendly forces and ensure that debriefs are conducted as required. As part of his garrison duties, the Master Sniper is responsible for sniper training and testing.

19. The group is organized into two sections of eight snipers each, with the Unit Master Sniper and his driver for a total of 18. Each section is divided into two detachments of four snipers, one led by a Sergeant and the other by a Master Corporal. Each detachment has the further flexibility to be divided into teams of two. Additions may be made to the sniper group depending upon the unit's role, the operational deployment and the tactical situation. If the sniper group is mounted in light vehicles, the group may be assigned additional drivers (up to one per four man detachment) so that when dismounted, the entire detachment may leave the vehicle. A storeman may also be allocated to the group.

20. Within garrison, the sniper group may be commanded by and administered by the unit reconnaissance platoon. If the sniper group is employed separately from the reconnaissance platoon, it may be allocated a storeman/driver from the platoon.

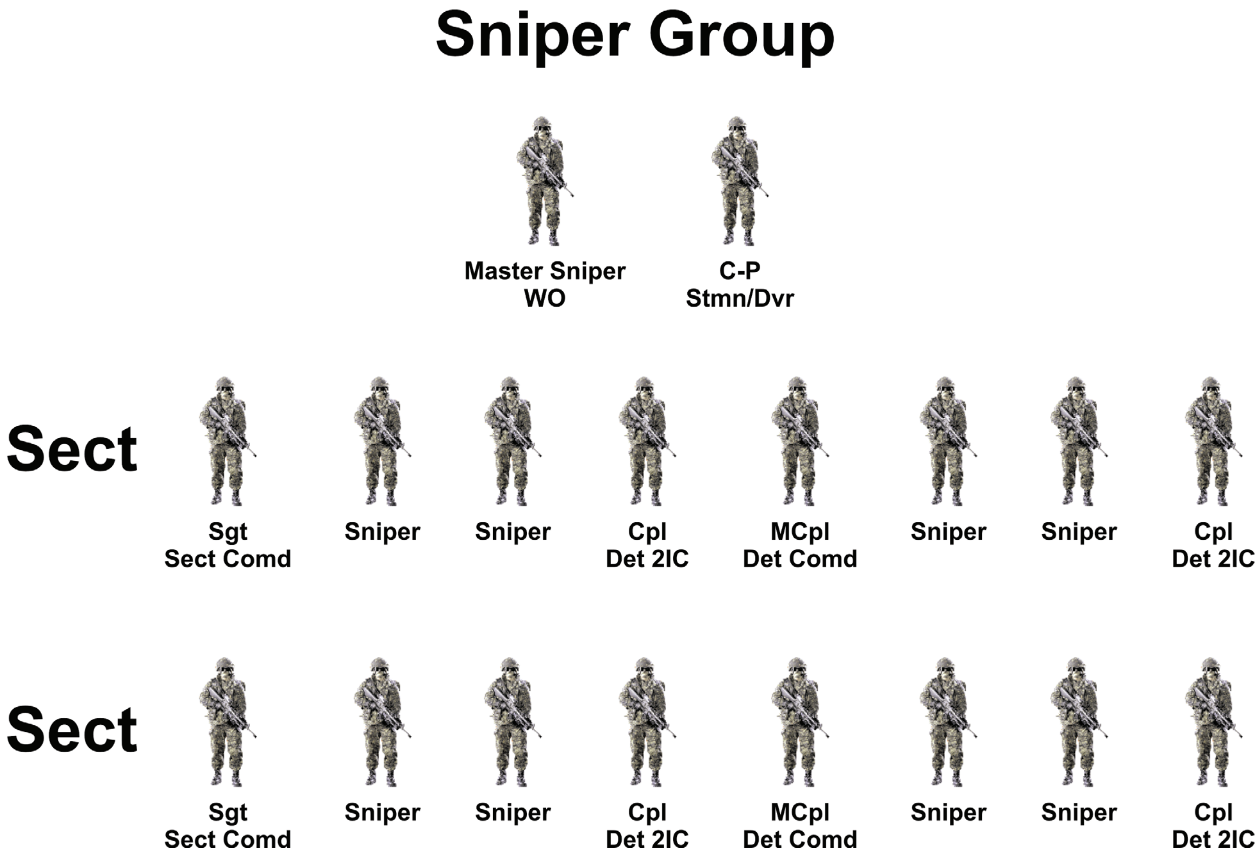


Figure 1: Sniper Platoon

21. Grouping as detachments offers mobility, flexibility and concealment. The sniper detachment can maintain continuous observation of an area while alternating security, sleeping, eating, etc., while relieving the stress inherent in a single person operation. The detachment organization is invaluable in target acquisition, range estimation, observation of swirl and strike, and fire corrections when engaging targets. Additionally, the mutual support of snipers working together is a significant morale factor during employment in combat environments or extended operations. In some unique circumstances, snipers may be organized according to the needs of the tactical situation, but shall never be employed in less than team (pair) strength.

22. The detachment consists of two sniper teams, each equipped with a Medium Range Sniper Weapon (MRSW). The flexibility also exists to arm the detachment with a Long Range Sniper Weapon (LRSW) for materiel targets or with a Short Range Sniper Weapon (SRSW) for operations in urban terrain or for those operations when over-penetration of heavy calibre weapons and potential collateral damage is a concern. The sniper pair is the minimum operational organization for employing snipers. Each member of the detachment is a trained sniper and can perform the functions of sniper, observer, or as security within the detachment. Snipers will always operate, as a minimum, in pairs as a two-man team, rotating through the duties of shooter and observer. The pair provides mutual protection and relief

23. Weapon distribution within the sniper section and detachments will vary, depending upon the mission and threat. Individuals within the section and detachments will be charged with

security of the element and therefore will be armed accordingly, possibly with C7 weapons and grenade launchers attached.

24. The basic ammunition load for a dismounted sniper detachment should be as follows:

a. LRSW (50 cal) Match round x 30;

b. LRSW (50 cal) Materiel neutralizing round x 30;

c. MRSW Match round x 160;

d. SRSW Match round x 200;

e. 5.56 mm ball x 900;

f. 40 mm HE x 24;

g. 40 mm smoke x 6;

h. 40 mm illumination x 6;

i. 9 mm pistol ball x 52;

j. Grenade, frag x 4;

k. Grenade, smoke x 4; and

l. M18A1 Command Detonated Munition (Claymore) x 2.

25. If supported by vehicle means of transport (including ATV or light vehicle) the basic load can be augmented in accordance with operational needs.

CHAPTER 2
SNIPER EMPLOYMENT

SECTION 1
COMMAND, PRINCIPLES AND TASKS FOR EMPLOYMENT

1. The sniper has special abilities, training and equipment. His job is to deliver discriminatory precise rifle fire against enemy targets, which cannot be engaged successfully by other rifleman because of range, size, location, fleeting nature, or visibility. A sniper's training incorporates a wide variety of subjects designed to increase his value as a force multiplier and to ensure his survival on the battlefield. A sniper must be highly trained in long-range rifle marksmanship and field craft skills to ensure maximum effective engagements with minimum risk.

2. The primary mission of a sniper in combat is to support combat operations by delivering precise long-range fire on selected targets. By this, the sniper creates casualties among enemy troops, slows enemy movement, frightens enemy soldiers, lowers morale, and adds confusion to their operations. The secondary mission of the sniper is collecting and reporting battlefield information. A well-trained sniper, combined with the inherent accuracy of his rifle and ammunition, is a versatile supporting arm available to an infantry commander. The importance of the sniper cannot be measured simply by the number of casualties he inflicts upon the enemy. Realization of the sniper's presence instils fear in enemy troop elements and influences their decisions and actions. A sniper enhances a unit's firepower and augments the varied means for destruction and harassment of the enemy. Whether a sniper is organic or attached, he will provide that unit with extra supporting fire. The sniper's role is unique in that it is the sole means by which a unit can engage point targets at distances beyond the effective range of the C7 rifle. This role becomes more significant when the target is entrenched or positioned among civilians, or during crowd confrontation operations.

3. The sniper's weapon is the sniper weapon system. The sniper, when employing the MRSW, is capable of killing selected personnel and sensitive equipment at ranges up to 1200 m and inflicting casualties at ranges up to 1500 m. However, the sniper must be capable of stalking to within 150 m of the chosen target, where terrain dictates, to complete the mission.

4. All members of the team should be trained on the LRSW to allow for rotation during extended missions. Depending on the type and importance of the target, there may be a requirement to employ more than one LRSW sniper detachments on the objective to ensure destruction of a specific target or, in an area where there is a target rich environment containing several high priority targets, to permit simultaneous engagement of multiple targets. When employing the LRSW, the sniper is capable of destroying or disabling hardened equipment up to the penetration performance of the ammunition. The maximum range for the anti-material role is 2000 m. A secondary role for the LRSW is killing selected personnel at ranges up to 1500 m.

5. Snipers should only be assigned suitable targets such as selected enemy leaders, key individuals, specialists, enemy snipers, and key enemy equipment and vehicles. These personnel and equipment will be found in target areas. Examples of target areas are battle positions, gun positions, command posts or minefields. Snipers should not be employed on tasks which can be

more efficiently completed by other means. Their deployment must be based on sound intelligence, and time must be allowed for them to deploy to take maximum advantage of stealth and concealment.

6. Sniping is normally carried out from static positions, which may or may not be prepared. The sniper should be positioned to receive local protection from friendly troops if possible. Manpower permitting, a security team may be attached to the sniper team.

7. The talents and skills of sniper elements allow them to be used in a covert observation role. They may be employed (as part of or separate from reconnaissance platoon) in a static observation post, in a close target reconnaissance or they may be employed as security over-watch for an overt operation by other troops, such as a cordon and search task. In the latter instance, they may be employed covertly or overtly.

> During the Canadian deployment of 2 RCR elements to Haiti in 2003, snipers were attached to the company group. They were routinely used in covert observation posts in the heart of the urban areas. They provided over-watch for cordon and search operations, and were often inserted 12 to 24 hrs in advance to provide situational updates. Additionally, they were used in the sensor to shooter link, in that from covert observation posts, they could trigger QRF or other elements to react to fleeting opportunities and emerging threats.

COMMAND AND CONTROL

8. The employment of snipers will vary according to the scale and nature of the conflict. . Careful planning is necessary in order to obtain the best use of available snipers. The operational commander must formulate a sniping policy in accordance with the Rules of Engagement (ROE) and the desired effect.

9. Snipers will normally be centrally controlled by the unit commander and tasked to support sub-units as required for operations. For special tasks, brigade or higher formation may task snipers. Given their high level of training and unique skill set, snipers may also be employed in direct support of special forces and their operations.

10. Sniper should be considered as another support weapon available to the tactical commander. As such their orders must be given in a separate section of the operation order, as with other support weapons.

11. When deployed, snipers will normally be controlled by radio on battle group net. Ideally, the Master Sniper will also monitor a platoon administrative net. Certain operations, such as those in urban areas, will require snipers to be placed under tactical command (TACOM), operational control (OPCON) or even operational command (OPCOM) of the sub-unit concerned. In these cases, attached snipers will monitor the sub-unit net.

12. In conducting certain sniper tasks, such as operations behind enemy lines or internal security operations, the sniper detachment or pair commander will be required to make independent, sound judgements that could have major ramifications for the unit or formation.

The sniper commander therefore should be very carefully chosen. Sniper detachment commanders are trained in advising on the employment of snipers up to sub-unit/combat team level operations.

SNIPER CAPABILITIES AND ADVANTAGES

13. When used correctly the sniper is an invaluable force multiplier on the battlefield. Effective sniping does more than inflict casualties and cause inconvenience to the enemy. It has a marked effect on the feeling of security and morale of enemy troops, thus affecting their confidence and fighting spirit.

14. Snipers allow for tactical effects to be applied over a large area, including in terrain not actually occupied or held. The sniper disrupts enemy movement, observation, and infiltration, and reduces the possibility of surprise.

> During the war with Iraq in 2003, battalion snipers of 1st Bn, Royal Regiment of Fusiliers, were attached to support company combined arms teams. After the seizure of bridges into Basra, the manoeuvre elements adopted hasty defensive positions. At night, sniper detachments deployed forward to engage enemy RPG teams that utilised the low ground to attack the armoured vehicles supporting the defensive positions.

15. With their advanced techniques of silent, undetectable movement (stalking), camouflage (ghillie suits), positions (hides), and their ability to disappear instantly, there is little chance of the enemy ever knowing snipers are there—until it is too late.

16. The snipers' advanced optical gear and observation techniques let them see the terrain in much more detail than normal infantry under all conditions. Snipers are able to detect enemy positions and activities that would not normally be seen.

17. The sniper's techniques of range estimation and ability to use laser range finding equipment allow extreme accuracy and a high degree of proficiency controlling fire support and seeking first round fire for effect.

18. With the snipers' map reading, knowledge of aerial photography and advanced navigational techniques, they are able to brief the commander on the terrain over which they pass and provide detail for any changes, obstacles and likely avenues of approach.

PRINCIPLES OF EMPLOYMENT

19. The following principles should be considered when employing snipers:

a. **Firepower**. All weapon systems are capable of delivering long-range precise fire at their maximum ranges. The MRSWS and LRSWS also furnish commanders with an anti-material/structure capability.

WEAPON SYSTEM	RANGES	TYPES OF MUNITIONS	TYPE OF TGT
C 7 Rifle	0–300 m	Ball	Anti-personnel
C 3 A1	0–600 m	Match Ball	Anti-personnel
SRSW	0–800 m	Match Ball	Anti-personnel
MRSW	0–1200 m	Match Ball	Anti-personnel out to 1200 m
		AP	Destruction of light Armoured Vehicles out to 800 m.
		API	Destruction of Anti-Material targets out to 1200 m.
LRSW	600–2000 m	Match Ball	Anti-personnel out to 1500 m.
		APHE	Anti-Materiel Role: Destruction of materiel targets out to 2000 m.

b. **Mobility**. The sniper detachment (4 man) or team (2 man) and its equipment is small and easily inserted into or extracted from an area of operations by parachute, helicopter, naval craft, ground vehicle or by foot;

c. **Sustainability**. A sniper detachment or team is capable of conducting either sustained surveillance or offensive operations for up to 72 hrs;

d. **Communications**. The sniper detachment or team is capable of reporting battlefield or other types of intelligence; and

e. **Flexibility**. Snipers are capable of operating in all operations of war, day or night, in all weather conditions whether conducting surveillance operations, engaging selected enemy or sensitive material targets.

LIMITATIONS

20. The following limitations should be considered when employing snipers:

a. **Mobility**. A sniper can be inserted by almost any method to the battlefield; however, his ability for subsequent deployment is greatly reduced. Each detachment may be allotted an LUVW. Therefore it is likely that each detachment will be required to have at least one person with the vehicle during a mission.

b. **Organization**. The sniper platoon consists of 4 four-man detachments. They are commanded by the unit Master Sniper. Each detachment has the flexibility of further dividing into 2 sniper pairs. The sniper detachment commander is qualified to advise commanders on the employment of snipers up to combat team level. The current organisation does not allocate designated vehicle drivers for each detachment.

GENERAL SNIPER TASKS

21. While sniper tasks are very specific during certain operations, many of the tasks they are able to accomplish are generally applicable to all operations. The following list is by no means all-inclusive and unit Master Snipers are encouraged to develop sniper tasks according to the unit commander's intent and operational requirements:

a. targeting command posts and key enemy leaders;

b. targeting crew-served weapons crews;

c. covering defiles;

d. covering engineer/pioneer parties;

e. covering demolition guards and supply columns;

f. counter-sniping;

g. flank protection;

h. dominating key terrain;

i. deployed as part of cut-off forces;

j. deployed forward to cover counter-attack routes;

k. deployed as part of a firebase or as a separate firebase;

l. select targets and engage just prior to H-hour;

m. cover obstacles during crossing by friendly forces;

n. observation of and indirect fire control on enemy positions;

o. accurate fire into bunkers and through embrasures;

p. ambushing or harassing withdrawing enemy;

q. covering fire for observation posts (OPs) or fire positions;

r. following assault troops onto objectives; and

s. disabling or destroying key enemy equipment at long range.

SECTION 2
EMPLOYMENT IN ALL OPERATIONS

OFFENSIVE TACTICAL OPERATIONS

22. Sniper tasks during offensive operations should assist the commander in fulfilling subsidiary requirements such as gaining information, depriving the enemy of resources, assisting in deceiving or diverting the enemy from the main effort, assisting in fixing the enemy to prevent regrouping or repositioning, pre-empting the enemy from gaining the initiative, and disrupting enemy offensive action.

23. **Hasty Attack**. There is little scope for employing snipers during the hasty attack other than allowing them to operate on their own initiative with the current unit they are supporting. Snipers are trained to identify and reduce key enemy personnel and equipment without direction. Their precision fire may prove to be more valuable if delays or stalemates are experienced during the attack.

24. **Deliberate Attack**. The coordination and planning stages of a deliberate attack will allow time for commanders to utilize snipers to their full potential. In this type of operation snipers are most effectively employed with the fire support base. When operating within the firebase it will not always be necessary for snipers to shift their fire as with machine-guns. With their inherent pinpoint accuracy and powerful optics snipers can continue to reduce enemy targets in the midst of friendly forces. They may also be deployed forward of the firebase to support the attack with accurate selective rifle fire, or deployed with the cut-off force with the same task. If time permits they infiltrate behind enemy positions to disrupt counter-attacks or withdrawal, and harass enemy reinforcements. During the re-organization phase snipers can be deployed forward of the FEBA on likely enemy counter-attack routes.

25. **Counter-attack and Spoiling Attack**. If time permits and the distance is not too great snipers can be effectively employed with counter-attack forces to exploit the vulnerability which results from the enemy’s own offensive action. Counter-attack forces are normally reserve forces or are limited in size. The combat multiplying capability of the sniper could prove to be a valuable asset for this type of operation. The pre-emptive nature of the spoiling attack is a good opportunity for employing snipers. It attempts to strike the enemy where he is most vulnerable, e.g. identifying key personnel and equipment, and eliminating them while they are on the move or just prior to crossing their line of departure. The disruptive nature of a sniper engagement contributes to the overall effectiveness of the spoiling attack.

26. **Reconnaissance in Force**. Sniper impact during the reconnaissance in force will be limited to carrying out the general tasks of the sniper whenever possible, while conforming to the commanders intent. During tank-infantry co-operation snipers provide tanks with long range protection from concealed enemy antitank weapons, their crews, and tank killer teams. During a

tank-infantry attack, the sniper's main concern is security of the tanks. The primary targets of the sniper will be enemy antitank weapon crews and enemy tank crewmen.

27. **Raid**. Snipers are used with the security element to isolate the objective, cover avenues of approach into the objective, cover friendly withdrawal routes, prevent enemy reinforcement, and assist in observing the objective and surrounding areas. Snipers can be used with the support element if a specific enemy target is to be eliminated. Snipers may also be used specifically as a lethal initiating event, or to support the raiding force by reducing the enemy's ability to react.

28. **Feint and Demonstration**. The purpose of a feint is to deceive. The purpose of a demonstration is to distract the enemy's attention without seeking contact. The very nature of the sniper's skills lends itself to this operation. Snipers may be employed in an active sniping campaign to fix and occupy enemy forces in order to permit operational commanders to plan and conduct further operations.

DEFENSIVE TACTICAL OPERATIONS AND DELAYING OPERATIONS

29. Defensive operations are normally undertaken when the enemy has the initiative. They aim to break the enemy attack, destroy his forces, and stop him from accomplishing his aim. Ultimately this will establish the conditions for regaining the initiative. Snipers, as with all supporting arms, play a vital role in the commander's strategic planning. The sniper enables the commander to maintain an offensive posture while in the defence. The sniper is best used outside of the forward edge of the battle area (FEBA) to provide early warning of enemy approach, disrupt it and, if possible, cause the enemy to deploy prematurely. Snipers deploy at night and construct hides on likely avenues of approach in order to provide early warning to front line troops of impending attacks, probes, or infiltrations, and to reduce selected key targets. Snipers can provide early warning of night attacks. At the proper time, they take out enemy guides at their line of departure and release points; force the enemy to deploy early or to attack under illumination; gather data on routes and release points; and cause confusion and panic.

30. Snipers are excellent deterrents for enemy infiltration attempts. By covering intervals between units, flanks, and the rear of friendly positions in areas that cannot be covered with regular patrolling and observation from the FEBA, snipers greatly reduce the possibility of surprise. The sniper must put himself in the mind of the enemy, constantly trying to out-think the enemy in planning the location for his hides. When possible snipers must be provided with a certain degree of infantry protection to their rear, which is the snipers' most vulnerable area, especially when they are in a hide. This security should not be close enough to compromise the position, but near enough to help in the extraction if necessary (i.e. within 1 km).

31. Snipers should prepare hides with assistance from local infantry support if available, within the defensive perimeter but away from troop positions. Primary, alternate and supplementary positions should be prepared when time permits, complete with range cards, to cover the following:

a. avenues of approach;

b. obstacles;

c. dead ground; and

d. terrain features.

32. Snipers can be used on terrain outside of the FEBA to cover gaps (breaks in continuity that cannot be covered by small arms fire from the FEBA) when a final protective fire (FPF) from supporting arms cannot be used.

33. When operating in another unit's sector coordination with front line units on the FEBA is vital. Snipers must make sure they have been included in the defensive plan of the unit in whose sector they are operating.

34. **Mobile Defence**. Mobile defence focuses on the destruction of attacking forces, permitting them to advance to a position which exposes them to counter-attack and envelopment. Employing the sniper section in prepared hides throughout the mobile defence area, with a series of alternate hides, provides snipers with the best opportunity to inflict the greatest damage on the enemy.

35. **Area Defence**. Area defence focuses on the retention of terrain, drawing the enemy into a series of interlocking positions from which he can be destroyed by fire. With careful planning snipers can be deployed anywhere within the defensive framework to produce the greatest effect.

36. **Patrolling**. Snipers help the infantry commander maintain an offensive posture while in the defence. Snipers go out with, operate as an extension of, and return with routine patrols. Normally the patrol provides protection and help in building the sniper’s hide, and then continues with the rest of their patrol.

37. **Delaying Operations**. A delaying operation is an operation in which a force under pressure trades space for time by slowing down the enemy’s momentum and inflicting maximum damage without becoming decisively engaged. It is likely that these operations will be carried out in less than ideal conditions. However, every opportunity to regain the initiative should be exploited. The independent aggressive nature of the sniper will assist commanders in delaying, confusing and demoralizing the enemy. The most effective employment of snipers in this type of operation is executing flank and rear attacks, or attacks from areas where the enemy would be unlikely to divert his forces. Obstacle crossings are another ideal employment opportunity for snipers during delaying operations, particularly when isolated bodies of troops have been separated from follow-up forces.

TRANSITIONAL PHASES AND ENABLING OPERATIONS

38. **Advance to Contact**. The fluid situation often prevailing in this operation of war presents good opportunities for employing snipers. Snipers will infiltrate enemy areas and engage them from unexpected directions. Snipers may also be tasked to secure defiles that friendly forces expect to advance through. The teams should move out well in advance of the projected movement so that they can move at their own pace to facilitate undetected movement and engage those targets threatening the advance. They may use normal stalking methods or be

inserted by ground vehicle, helicopter, parachute or amphibious landing. Contact with these teams by radio must be maintained.

39. **Meeting Engagement**. The meeting engagement is an unexpected combat action that may occur when friendly and enemy forces attempt to fulfil their mission by offensive action. It often occurs during the advance to contact and can easily lead to a hasty attack. The sniper's task during a meeting engagement will be defined once the contact begins to develop. However, good sniper employment during the advance to contact will greatly reduce deployment time during a meeting engagement.

40. **Link-up**. Link-up operations are conducted to join two friendly forces in enemy controlled territory. It may be necessary to destroy the enemy or deny them access to a specific area before a link-up is established. Snipers can infiltrate link-up areas prior to the operation and use long range fire to discourage the enemy's presence. During the link-up, flank security and over-watch are typical sniper tasks.

41. **Withdrawal**. Withdrawal occurs when a force disengages from an enemy force in accordance with the will of its own commander. Typically the sniper would be employed with and move with rear security elements to delay the enemy advance as much as possible to permit a clean break from contact, harassing the enemy and withdrawing with or before the armour.

42. Effective sniper fire can enhance the morale of friendly troops in the withdrawal. They can aid in the deception plan, and help to cause delay and confusion among the enemy by engaging the flanks and rear elements of an enemy force.

43. When a sniper is deployed as part of the rear guard consideration must be made for them being by-passed and then becoming laybacks.

44. In the case of laybacks it is vital that communications with them be maintained to pass information and intelligence, to control movement, to arrange for extraction, and to allow the sniper team to call indirect fire on large enemy groups.

45. **Relief**. Relief is an operation when combat activities are taken over by one force from another, normally in order to sustain the overall level of combat power:

a. **Relief in Place**. Relief in place is normally conducted in defensive operations when the existing force is depleted or exhausted, when troops of one type need to be replaced by other troops, or for routine rotation. During the relief in place snipers along with reconnaissance elements will conduct their relief prior to the main rotation. Incoming snipers must be fully briefed and prepared to support the main body during the relief sequence.

b. **Forward Passage of Lines**. This is a relief in which a force advances or attacks through another which is in contact with the enemy. The sniper's role during this operation is limited to targets of opportunity or general task employment in accordance with the commander's intent.

c. **Rearward Passage of Lines**. This is a relief where a force moving to the rear passes through the sector of a unit occupying a defensive position. During this operation, depending on sniper mobility, rear and flank security, as well as over-watch, are standard sniper tasks.

d. **Retirement**. This is movement away from an enemy by a force not in contact. In this operation snipers are best used outside the scope of normal flank security. They dominate key terrain; cover avenues of approach; confuse the enemy; gather detailed information on the terrain, route, and enemy; and control fire support.

STABILITY (TACTICAL) OPERATIONS

46. Stability operations are those tactical operations conducted by military forces in conjunction with other agencies to maintain, restore or establish a climate of order within which responsible government can function effectively and progress can be achieved. [1] They occur in all campaigns, be it a major combat operation, a counter-insurgency or a peace support operation, and together with defensive and offensive operations, constitute full spectrum operations. Stability operations occur in all campaigns including major combat. For example, following a company attack in a major combat operation, there will be a need to secure movement in the area (through check points for example) and a need to assist any non-combatants injured or suffering.

47. Stability operations normally include such tactical level undertakings as movement and area control, observation and monitoring, demobilization and security sector reform, and humanitarian aid and reconstruction. They are realized through tactical tasks such as vehicle check points (VCPs), framework patrolling, overt and covert observation posts, aid distribution and cordons and searches, to name a few.

48. The employment of snipers in such tactical operations will follow the same principles and practices as other types of operations. They may be employed in a wide variety of roles, such as:

a. observation posts, both covert and overt;

b. over-watch (covert or overt) for other operations such as framework patrols VCPs or cordon and search; and

c. training teams to assist in the reform of military and police forces, and their technical skills.

[1] Draft definition of stability operations, DGLCD October 2005

UNIQUE OPERATIONS

49. With all unique operations, the advanced insertion of snipers with security elements prior to main body arrival will ensure a more effective protective blanket during the vulnerable insertion and extraction of combat forces.

50. **Airmobile Operations**. Snipers can be very effective when employed in airmobile operations due to their mobility and long range precision fire. As a supporting arm for any operation the variety of tasks which they can be employed on greatly augments the flexibility of the commander. Airmobile resources permit the commander to insert and extract snipers at will.

51. **Airborne Operations**. The use of snipers during airborne operations gives a commander flexibility by virtue of their reach and responsiveness, and permits him to operate at will throughout his area of operations. Snipers inserted in this manner can move to the objective area, keep it under observation until friendly forces are poised for the attack, and reduce key targets prior to and during the attack. Snipers may also be inserted in this manner with the sole function of eliminating a particular target.

52. **Amphibious Operations**. Snipers should go ashore prior to or with the pre-assault force, or with the first wave. With their advanced optical devices and highly skilled observation techniques, snipers can identify enemy bunkers that could not normally be seen by the untrained eye. Snipers can also identify, by examining the position of bunker apertures, which bunkers are mutually supporting, thus determining the sequence in which bunkers should be reduced by assaulting infantry. Snipers provide accurate, precision fire through the apertures of enemy bunkers and can ensure that mutually supporting positions are reduced.

53. **Operations by Encircled Forces**. The sniper's primary role during this type of operation is to provide precision fire on to as much of the surrounding area as possible. Since an attack may come from any direction snipers must be prepared to support the commander from any number of battle positions. Effective and productive snipers should be able to anticipate the commander's requirement.

SECTION 3
OPERATIONS OTHER THAN WAR

DOMESTIC OPERATIONS

54. **General**. The role of the sniper in a domestic operation is to dominate the area of operations by the delivery of selective, aimed fire against specific targets. Sniper employment must comply with the operation's rules of engagement. The sniper can also assist in gathering information.

55. **Tasks**. During domestic operations specific tasks which may be assigned to snipers include:

a. engaging dissidents involved in such activities as hijacking, kidnapping, holding hostages, etc.;

b. engaging dissident snipers as opportunity targets or as part of a deliberate clearance operation;

c. covertly occupying concealed positions to observe selected areas;

d. recording and reporting all suspicious activity in the area of observation;

e. assisting in coordinating the activities of other elements by taking advantage of hidden observation positions; and

f. providing protection for other elements of the controlling forces, including auxiliaries such as firefighters, repair crews, etc.

56. **Employment**. There will be a tendency in domestic operations to employ snipers where in fact a rifleman is all that is necessary. This tendency must be avoided, otherwise snipers will soon become exhausted. An additional consideration in these operations must be the protection of the identity of unit snipers, especially those who have been successful. Known snipers may be the subject of special "manhunts" mounted by dissidents. Snipers will normally be held in a centralized reserve and will not be employed until the situation has degenerated, i.e. until shootings have occurred. If the situation demands, snipers may be deployed in hidden observation posts.

57. **Special Considerations**. Although the sniper is not normally subject to the same difficult conditions as in conventional war, there are other pressures. These include not only legal and political restraints, but the requirement to kill or wound persons without the motivational stimulus normally associated with the battlefield. During domestic operations snipers are subject to the same rules of engagement as other military personnel.

58. Ideally, a sniper should be deployed so that he can receive the order to fire from the appropriate local commander. This will often be difficult and must be compensated for by absolutely clear orders and instructions. All possible means must be taken to ensure that snipers are able to determine in each case the need to open fire, and that it constitutes reasonable force under the circumstances. By being held in central reserve until the outbreak of continued shooting, the sniper will not be hampered by the necessity of giving warning before firing. He will then positively identify and engage his targets in accordance with written orders, if he is away from the local commander, or in accordance with verbal orders, if he is physically close to or in radio communications with the local commander.

59. To ensure maximum accuracy during actual operations, snipers must zero their weapons daily, before they are placed on standby. This zeroing should be done at a minimum range of 100 m just prior to the commencement of the sniper team's standby shift. This should also be done just prior to snipers deploying to a covert observation position.

60. **Situations Involving Hostages**. The maximum range to engage dissidents who are holding hostages, to permit a one shot immediate kill, will be determined by the visible size of

the target. The maximum engagement range will often be very short, and will require the sniper to be well placed, undetected, and very close to the intended target.

61. Commanders must appreciate that even a good, well placed hit may NOT result in an instantaneous kill. Even a fatal hit may not prevent the death of the hostage, who may die as a result of a deliberate act by the dissident or by a muscular spasm triggering the dissident's weapon.

PEACE SUPPORT CAMPAIGNS

62. Operational campaign focused on peace support will involve mainly stability operations, such as area control, movement control and other framework operations. Sniper tasks during operations as part of a Peace Support campaign generally include: information gathering; over-watch of patrolsvehicle checkpoints and cordon and search operations; key point defence; and reporting. However, snipers must be prepared to carry out more traditional tasks including counter-sniping operations.

63. In order to best accomplish these tasks, snipers can be employed in various types of observation posts:

a. **Covert Rural**. This style of observation post is conducted in the same manner as the conventional style post used by both snipers and reconnaissance patrolmen. The task and duration will dictate the weapons and equipment, however, in all cases snipers should have:

(1) secure communications;

(2) day and night vision aids;

(3) suitable camouflage clothing and material;

(4) GPS;

(5) photography equipment; and

(6) writing materials, communications instructions, compass and reports and returns:

b. **Weapons**. The selection will vary with the task. For observation tasks, snipers will normally deploy with C7s and possibly a grenade launcher, depending on the threat. For an over-watch task, or if there is a possibility of an observation task turning into an over-watch task, conventional sniper weapons should be carried. Regardless of the task, smoke and pen flares should be carried to assist in the event that it becomes necessary to extract snipers or an alternate method of communications is required.

c. **Close Support**. While snipers are inserted, friendly forces should be in a position to support the operation. This may be by acting as a radio relay or close support if an extraction is required. The quick reaction force can be used for this task.

d. **Method of Insertion**. The method chosen depends on the task. Some methods commonly used are by foot, vehicle or helicopter. Coordination is usually done by the intelligence officer or operations officer, however direct liaison is preferred.

e. **Battle Procedure**. If required to insert a long term observation post, preparation time will be approximately 10 to 15 hours.

f. **Covert Urban**. During recent operations most surveillance conducted by Canadian snipers has been in an urban environment. The covert urban observation post generally requires much more battle procedure time. Under normal circumstances 2 to 4 days lead time is required to conduct reconnaissance for suitable locations. Time must be taken to determine local habits in the area, foot traffic patterns, children's play habits (children are the biggest compromise threat), and un-exploded ordnance. For selection criteria, infiltration, occupation, routine, security, and exfiltration criteria see Section 4, Urban Operations, of this chapter.

g. **Vehicle Mounted**. Due to the amount of military traffic within an area of operations the sniper has the opportunity to employ a covert patrol in an overt situation, e.g. by staging a vehicle break down, setting up a hasty vehicle checkpoint, or concealing a clandestine surveillance/camera crew in an escort or administration vehicle. It is important that the same method not be used more than once in the same area or it may cause suspicion. Both liaison officers (LOs) and civil military cooperation (CIMIC) personnel are excellent resources due to their knowledge of specific areas as well as key players. Care must be taken when using LOs or CIMIC personnel not to compromise their credibility.

h. **Overt Urban**. The overt urban post is used when a commander requires a sniper presence as a deterrent effect. These posts should cover the target area and have both flank and rear security. Ideally, the highest vantage point is ideal and minimizes sniper exposure. This option should only be considered if the counter-sniper threat in the area is low and no other assets can achieve the desired result. Care must be taken to conceal the identity of snipers manning the overt post.

SECTION 4
TACTICAL EMPLOYMENT CONSIDERATIONS IN OPERATIONS OTHER THAN WAR

GENERAL

64. The use of snipers in operations on the lower end of the spectrum of conflict and in domestic operations requires special consideration. It may be important, for political or information operations reasons, to maintain an exceptionally low profile for the use of snipers. Often their deployment will be in urban areas, amongst or near civilian populations and therefore much thought and consideration will have to be given to their use, their insertion and their extraction.

SELECTION OF THE SNIPER POST

65. **Introduction**. The following paragraphs give some suggestions and guidelines that should be followed by sniper teams selecting their post, particularly in an urban environment. These are not hard and fast rules, but are given only as a guide.

66. **Use of Maps and Photographs**. Once the general area in which an observation post is required has been established, a careful and detailed study of maps and photographs is essential. Large-scale street maps give considerable detail, while sewer plans and other useful information can be obtained from the local authorities. Air photographs, especially low level obliques taken from helicopters, are particularly useful, as is street photography, which can be taken by battalion or company photographers during the course of normal patrolling. A study of all of these sources, together with previous patrol reports and personal knowledge of the area, will indicate possible observation posts for subsequent ground reconnaissance. Sniper posts may be in occupied houses, shops, abandoned buildings, factories or public buildings.

67. **Ground Reconnaissance**. There are two distinct phases to ground reconnaissance. A preliminary phase is necessary to establish and confirm essential facts before the more delicate and dangerous phase of detailed reconnaissance can begin:

a. **Preliminary Reconnaissance**. The aim of preliminary reconnaissance is to prepare the way for detailed reconnaissance. Possible positions are viewed from a distance to determine their suitability. Routine patrols can be tasked to report on the normal habits of local inhabitants in relation to potential positions. In particular the risks of being found out need to be considered. Depending on the circumstances this reconnaissance may be done by map or public works information.

b. **Detailed Reconnaissance**. The success of the position will depend upon the thoroughness with which detailed ground reconnaissance is carried out. It is a good idea, therefore, to use the intended post commander for this reconnaissance, because he is not likely to leave even the smallest detail to chance. In particular he will look for a position with the following characteristics:

(1) **A Secure and Quiet Approach Route**. This should, if possible, be free of garbage cans, crumbling walls, barking dogs and other impediments.

(2) **A Secure Entry and Exit Point**. The more obvious and easily accessible entry and exit points are not necessarily the best as their constant use during subsequent relief of sniper teams may more readily lead to compromise.

(3) **Good Arcs of Observation**. It will be the exception to find the perfect position, which allows one to observe everything, in an urban environment. Restricted arcs of observation are inevitable but obviously the greater the arc the better. The degree of restriction will determine the suitability of the post.

(4) **Security**. The security of snipers once in position is important. They must be able to defend themselves. The more difficult access is to the position the less likely it is to be compromised. Bullet proof and bomb-proof cover is desirable.

(5) **Comfort**. This is the lowest priority but nevertheless is important. Uncomfortable viewing positions can only be maintained for short periods. An administrative area containing a water source and a latrine will be required for long-duration occupation of positions.

68. **Time**. It takes a considerable amount of time, determination and courage to find a suitable covert position in a hostile urban environment. Within the dictates of the situation, team commanders should avoid rushing the selection process. Failure to do so may result in unnecessary risks being taken and the consequent compromise of the snipers' location.

SELECTION AND MANNING OF THE SNIPER PARTY

69. Factors affecting the selection and manning of the sniper party are:

a. **Post Commander**. The selection of the post commander is partly determined by the importance of the position and partly by the availability of suitable team leaders who may be required for other tasks. Sniper posts that are likely to be maintained for more than 48 hours without change should be commanded by a senior NCO.

b. **Sniper Party**. The optimum size for the occupation of a position for a long duration in a hostile urban environment is probably four snipers. This allows for an effective system of watches and relief. It should also be large enough to defend itself in an emergency and to handle a casualty, pending the arrival of assistance. Selection of the members will be determined by their aptitude for such work. Those with knowledge of the area and who can recognize "wanted" persons are usually at a premium. Likewise, a reliable camera operator is

normally required and, where no specialists are available, such persons must be drawn from sub-units of other battalions.

BRIEFING

70. Sniper briefings will be conducted on two levels:

a. **Commander's Briefing**. The operations officer or the company commander in whose area the sniper post is to be located will normally brief the sniper team commander. An initial briefing will usually take place in sufficient detail to allow the team commander to carry out reconnaissance. A confirmatory briefing is then normally necessary, which must cover the following points:

(1) latest intelligence reports;

(2) composition, duration and task of the team;

(3) orders for occupation and relief;

(4) orders for opening fire;

(5) details of any reaction force, its availability, and the circumstances under which it is to be deployed;

(6) action to be taken in the event the position is compromised;

(7) administrative details;

(8) use of radio, including codewords; and

(9) update on descriptions of wanted personnel, with new photographs.

b. **Snipers' Briefing**. The team commander will brief snipers in considerable detail. Not all the team will necessarily have had the opportunity to carry out prior reconnaissance. Where other troops are involved in assisting the sniper team during occupation and relief (covering patrols, diversionary patrols, duty officers), they must also be briefed by the commander responsible for controlling all the groups.

OCCUPATION AND RELIEF

71. Occupation of the sniper post and the relief of the sniper party will require careful planning. Occupation will normally take place under cover of darkness. Ideally, sniper teams should be able to occupy and withdraw from positions under their own arrangements. This reduces the number of people involved and lessens the risk of compromise. However, where long-duration occupation of urban positions is involved this will not always be possible. The sniper team will have to carry a large amount of equipment, probably in rucksacks. Such a

heavily laden patrol, if seen in the streets, would arouse curiosity. It will normally be necessary therefore to provide some form of cover operation to facilitate occupation. This can be done either by the creation of a diversion or by the presence of covering patrols in the area:

a. **Diversions**. The aim of the diversion is to enable the sniper team and its equipment to be brought close to the area of the position and to allow its occupation under cover of the diversion. The most suitable diversions are likely to be the operation of traffic control points, patrols, or house searches. These allow the team to use the cover of vehicles to approach the area unseen. These activities can be made to last for as long as it takes the sniper team to get into position. The drawback, however, of such diversions is that they are apparent, and where they are required to cover relief they, being repetitive, are themselves likely to arouse suspicion and become the target of terrorist counter action.

b. **Covering Patrols**. These can be used to saturate the general area of the position and the routes to it. The sniper team can then approach secretly on foot and receive early warning by radio from the covering patrols of any civilian movement or unusual incidents in the area. Such early warning should give the team time to take evasive action before being seen. This method of covering occupation has the advantage of being quiet and is unlikely to arouse attention in the early hours of the morning. It can however, take a number of patrols to cover satisfactorily the area of the sniper post and the approaches to it.

72. **Securing the Sniper Post**. Getting in and out of the sniper post itself may be a problem, where it is secured from the outside, e.g. by padlock. In such cases, it is necessary to have an additional person with the team to secure the entrance after occupation. This soldier's withdrawal can be completed either under cover of a diversion or by tagging onto one of the covering patrols moving in the area. During subsequent relief, the snipers themselves can be responsible for opening up and securing the entrance. Only during final withdrawal will it again be necessary to introduce an extra soldier to secure the exit.

73. The length of time a team is left in position without relief will mainly depend on how easy or difficult it is to relieve it. Fear of compromising the location through frequent relief will be countered by a desire to alleviate boredom and to permit re-supply. Three to four days in occupation before relief is the acceptable norm.

74. The system for relief and final withdrawal is similar to that for occupation. Care must be taken to avoid following a routine. Timings should be altered, approach routes adjusted, and radio code words changed.

ROUTINE IN OCCUPATION

75. Occupation of a sniper post does not differ in principle from that of other military posts. For maximum efficiency a proper routine must be established and adhered to:

a. **Observation**. The number of persons "on duty" at any time will depend upon the number of viewing positions in the post. Normally, not more than two people will

be observing at the same time while a third person covers the rear, if approach from that direction is possible. At night the number of people "on duty" may be reduced to two or even one, although all possible approaches must still be watched.

b. **Concealment**. Concealment of the viewing position is vital if compromise is to be avoided. A desire to get improved observation by the careless use of binoculars, spotting telescope, or a camera may result in undue exposure or sudden movement, sufficient to disclose the observation post position. Concealment can best be achieved by the careful selection of a comfortable viewing position. If a window is being used for observation, the viewer must be placed well back in the shadow. The hands and face should be blackened, and dark clothing worn. It may be possible for a face veil or similar form of drape to be used. At any early stage after occupation a patrol can be tasked to report on the success or otherwise of the measures taken by the party.

c. **Housekeeping**. For lengthy occupations, the importance of maintaining a clean administrative area cannot be over-emphasized. All kit not in use is packed and ready in case of an emergency withdrawal. Cooking and smoking may be permitted, depending on the situation. All refuse is collected and taken away before the withdrawal. If latrines do not exist arrangements are made for the disposal of waste.

REACTION FORCE

76. Throughout the time that snipers are in position it is necessary to have a pre-designated reaction force of at least section size on immediate standby to respond to reports and sightings, and to assist in the event of an emergency.

77. The occasion and manner in which the reaction force is to be deployed is normally decided by the local battalion or company commander. Since time is likely to be a critical factor it is often best to re-deploy patrols already close by to intercept wanted dissidents, although this may not allow for adequate briefing before deployment. Care must be taken not to deploy the reaction force too often in the immediate area of the sniper post unless success is assured. Continued abortive forays to the same area will arouse suspicion and may eventually lead to compromising the position itself.

ADMINISTRATION

78. The following administrative points will need special consideration:

a. **Dress**. Normal patrol order as worn in an urban environment together with a rucksack is adequate. Black or grey coveralls may be a useful addition to concealment while in position but are likely to arouse suspicion if seen during occupation or relief activity.

b. **Weapons**. A service rifle with telescope, and a MRSW or SRSW, are normally appropriate for sniper teams, especially if the position is designed for an ambush.

c. **Special Equipment**. The following special equipment is usually required:

(1) camcorder;

(2) camera and spare film;

(3) small gas stove and fuel;

(4) radio (in addition to normal civilian telephone systems);

(5) photographs and a list of wanted personnel, if appropriate for the type of operation; and

(6) written authorization/open fire policies.

COMMUNICATIONS

79. It is essential that all those who have an interest in the information provided by the sniper party or are tasked to respond to situations are able to operate on the same frequency. The radio net will normally include battalion headquarters and flanking units or sub units. Since reaction time is a key factor in IS operations, the desirability of a common frequency to reduce reaction time tends to outweigh the possible loss of secrecy:

a. **Radio Equipment**. A civilian pattern radio set may be more efficient in urban areas. A spare set is desirable, together with spare ancillary equipment, earphones and batteries.

b. **Security**. Since civilian radio frequencies are so easily intercepted, correct procedures and radio discipline must be observed. Security can be enhanced by the following measures: frequent changing of callsigns; the use of codes, codewords, numbers and nicknames; the deliberate transmission of incorrect messages; and observing strict radio silence except for essential traffic. The exaggerated use of codes can be counter-productive however and must be guarded against, or they may result in confusion and loss of time.

SECTION 5
OPERATIONS IN SPECIFIC ENVIRONMENTS

NBC ENVIRONMENT

80. Snipers must be able to operate in an NBC environment. They may have to act as NBC sentries on occasion therefore their knowledge of NBC protection must be excellent. The main problems the sniper will encounter within an NBC environment are:

a. **Warning**. Snipers may be deployed away from other locations and so may not receive early warning of NBC attacks.

b. **Movement through Chemical Environments**. Snipers cannot be expected to stalk through contaminated areas, since wearing individual protective equipment during a stalk is certain to produce dehydration or heat casualties. Furthermore protective suits cannot withstand the rigours of sniper tactical movement.

81. **Good Planning**. A knowledge of chemical immediate action drills, and intelligence concerning the threat, may overcome most of the above problems. All tasks must be well planned and a great deal of additional time allocated. Suitable equipment must be carried to deal with any likely problems.

URBAN OPERATIONS

82. Operations in urban areas should not be considered unique for they will be commonplace in future operations. Employing snipers in an urban environment can contribute tremendously to overall mission success. Long range precision fire can engage targets at great distance; advanced optics can discriminate individual point targets and thus save innocent bystanders or minimize collateral property damage; and, finally, sniper observation skills offer superior intelligence collection capabilities. A sniper employed in an urban environment is not only a casualty producer, but an intimidating psychological weapon.

83. Urban combat usually occurs when a city is between two natural obstacles and cannot be bypassed; seizure of the city contributes to the attainment of an overall objective; or political or humanitarian concerns require the seizure or retention of the city.

84. In the city, ranges for observation and fields of fire are reduced by structures, as well as the smoke and dust of combat. Targets will generally be exposed briefly at ranges of 200 m or less.

85. Units fighting within urban areas often become isolated by the enemy. Snipers therefore must have the skill, initiative and courage to operate effectively while isolated from their unit.

86. The defender will generally have the advantage over the attacker in urban combat. The defender occupies strong positions, whereas the attacker must be exposed in order to advance. In addition, the greatly reduced line of sight, built in obstacles and compartmented terrain require the commitment of more troops for a given frontage. Troop density may be three to five times greater for both attacker and defender in urban combat than in rural environments.

87. Developing tactics for urban operations, such as penetration and thrust, rely on the protection of armoured vehicles for robust and rapid movement to seize key terrain. Snipers will still be able to play important roles in such tactics, particular in the securing of the seized key terrain.

88. Due to the density of structures, radio communications are degraded. This, combined with limited observation, makes control of forces difficult. The well-established defender will probably employ wire communications to enhance control, thus adding to his advantage.

89. Snipers may encounter a greater degree of stress during urban combat. Continual close combat, intense pressure, high casualties, the fleeting nature of targets, and fire from an unseen enemy may produce increased psychological strain and physical fatigue.

90. Commanders may be restricted in the weapons and tactics that they are allowed to employ to avoid unnecessary damage to the area. This may be necessary for example to preserve a natural cultural heritage or gain the support of the population. In such cases, snipers are ideally suited to deliver discriminating fire against selected targets.

91. Attackers will generally limit artillery fires to the direct fire mode. This is done to prevent reducing the city to rubble, an action that produces few casualties and tends to enhance the defender's fortifications and concealment, and restrict avenues of approach.

FACTORS TO CONSIDER WHEN OPERATING IN AN URBAN ENVIRONMENT

92. When the sniper evaluates urban terrain the following factors should be considered:

a. **Fields of Observation and Fire**. Buildings on the edge of a city provide better fields of fire than buildings in the interior. In the city, tall buildings with numerous windows often provide the best fields of fire, especially if the buildings have spaces between them, as is often the case in outlying high-rise areas.

b. **Cover and Concealment**. Buildings with brick walls and few, narrow windows provide the best balance between cover and concealment and fields of fire. Roofs provide little protection; snipers are better protected in the lower stories than directly under the roof. (An exception to this rule is the parking garage.) Floor layouts with many small rooms provide more protection than floor layouts with larger rooms.

c. **Obstacles**. Doors and fire barriers are common in commercial buildings. They become obstacles if they are shut and secured. Furniture and appliances can also become obstacles in a building. Barbed wire can be used effectively inside a building because it further restricts movement.

d. **Key Control Points**. Key control points in a building are entrances, hallways, and stairs. Troops that control these areas control the building.

e. **Avenues of Approach**. The best way to gain entry into a building is from the top. Therefore, the most important avenue of approach to look for is one that quickly leads to the top (e.g. fire escapes, drainpipes, or adjacent buildings.

f. **Distribution of Building Types**. The layout of a city can generally be determined by the distribution of buildings within the city:

(1) Mass construction buildings (modern apartments and hotels) are the most common structures in urban areas (two thirds of total area), and are usually constructed of brick.

(2) Steel and concrete framed multi-storey buildings are found in the core area, a city's most valuable land, where, as centres of economic and political power, they have high potential to be of military significance.

(3) Open spaces (e.g. parks, athletic fields and golf courses) account for about 15% of an average city's area. Most of this area is suitable for helicopter landings and take off.

93. **Line of Sight Factors**:

a. Street areas consist mostly of one type of building, which normally have a common pattern. Street widths are grouped into three major classes:

(1) narrow (7 to 15 m), found in such places as medieval sections of European cities;

(2) medium (15 to 25 m), found in newer planned sections of most cities; and

(3) wide (25 to 50 m), where buildings are located along broad boulevards or set far apart on large parcels of land.

b. When a street is narrow, observing or firing into windows of a building across the street can be difficult because an observer is forced to look along the building rather than into the windows. When the street is wide, the observer has a better chance to look and fire into and out of window openings.

94. **Sources of Urban Information**. Due to the density and unique characteristics of operations in an urban environment, there is a requirement for highly detailed intelligence. Snipers should have the following materials for planning operations:

a. **Maps and Air Photos**. Although tactical maps do not show human-made objects in enough detail for tactical operations in urban terrain, they do show the details of terrain adjacent to urban areas. Tactical maps should be supplemented with both vertical and oblique air photos.

b. **Civil Government and Local Military Information**. Considerable current information on practically all details of a city can be obtained from civil governments and local military forces, e.g.:

(1) large scale city maps;

(2) diagrams of underground sewer, utility, transport and miscellaneous systems;

(3) information on key public buildings and rosters of key personnel;

(4) information on the size and density of the population;

(5) information on police and security capabilities;

(6) information on civil defence, air raid shelters, and fire fighting capabilities; and

(7) information on utilities, medical and mass communications facilities.

95. **Urban Characteristics**. The characteristics of built-up areas and the nature of urban warfare are important considerations, and directly affect the employment of our sniper systems. The sniper during urban operations must consider the following basic factors:

a. **Categories of Urban Terrain**. Urban terrain may be categorized as large cities, towns and small cities, villages, or hamlets. A detailed description of various sized urban centres is given in B-GL-322-008/FP-001.

b. **Description of Urban Terrain**. Urban terrain mainly consists of human-made structures. Buildings are the main components of urban terrain. They provide cover and concealment, limit fields of fire and observation, and impair movement. Thick walled buildings provide excellent protection from hostile fire. Urban streets are generally avenues of approach, however forces moving along streets are often canalized by buildings and terrain that offer minimal off-road manoeuvre space. Obstacles on streets are difficult to bypass due to these restrictive avenues of approach. Underground systems found in some urban areas are easily overlooked but can be important to the outcome of operations. They include subways, cellars, and utility systems. The following is a breakdown of how most cities are laid out:

(1) **Industrial Areas and Residential Sprawl**. Residential areas consist of some houses or small dwellings with yards, gardens, trees, and fences. Street patterns are normally rectangular or curving. Industrial areas consist of 1 to 3 story buildings of low, flat roofed factories or warehouses, generally located on or along major rail and highway routes. In both regions there are many open areas.

(2) **Core Periphery (Outside Edge)**. The core periphery consists of narrow streets 12 to 20 m wide, with continuous fronts of brick and heavily walled concrete buildings.

(3) **City Cores and Outlying High-rise Areas**. Typical city cores today are made of high-rise buildings, which vary greatly and allow for more open space between buildings than that allowed in old city cores. Outlying high-rise areas are dominated by this open construction style to a greater degree than city cores. Generally, streets form a rectangular pattern.

(4) **Commercial Ribbons**. These are rows of stores, shops, etc., built along either side of major streets through the built-up areas. Generally, these streets are 25 m wide or wider. The buildings are uniformly 2 to 3 stories tall.

(5) **Structural Configuration of Buildings**. The basic classes of structures encountered in a built-up area can generally be classified as concrete, masonry or wood. However, any one building may include a combination of these materials. All buildings offer concealment, even though the degree of protection varies with the material used.

SNIPER EMPLOYMENT IN URBAN OPERATIONS

96. Urban operations will be the battlefield of the future and therefore require snipers to be trained as well as psychologically prepared for the demands of urban combat. The cost of employing a given number of soldiers in an effective sniper organization will be more than offset by the effects this will have on the enemy.

97. Snipers contribute to the urban battle by shooting selected enemy soldiers and rendering equipment useless. General guidance for sniper employment is as follows:

a. Snipers should be given general areas (buildings or a group of buildings) in which to position themselves, but the final firing position is never dictated to the sniper. Sniper positions should cover obstacles, roofs, gaps in final protective fires, and dead ground. The sniper also selects numerous secondary and supplementary positions to cover his area of responsibility.

b. Engagement priorities for snipers are determined by the relative importance of targets to effective enemy operations.

c. Sniper employment during the attack on an urban area is usually divided into the five phases of offensive urban operations:

(1) **Investment/Isolation**. This phase is designed to isolate the battle area by seizing terrain features that dominate the approaches to it. Snipers deliver long range precision fire at targets of opportunity, particularly in the area of the planned break-in and the flanks.

(2) **Break-in**. Consists of the advance to the built-up area and seizure of a foothold on its edge. Snipers will engage targets of opportunity in the break-in area and on its flanks. Once the break-in has begun, snipers will continue to support and assist with any cut-off of fleeing enemy. It is during this period that snipers move forward and assume their initial position to support continuation of the attack.

(3) **Securing Objectives**. This stage of an urban attack sees the expansion of the foothold seized in the break-in to secure immediate objectives that will

support a further clearance**.** Snipers will continue to provide supporting fires, flank security and engage targets of opportunity, particularly as the enemy begins a battle to disrupt our actions.

(4) **Clearance**. This consists of the advance through the built-up area in accordance with the commander's intent. Snipers should operate in each zone of action, moving with and supporting infantry units. They should operate at a sufficient distance from infantry to keep from getting involved in firefights, but close enough to kill more distant targets that threaten the advance. Some snipers can operate independently of the infantry on missions to search for targets of opportunity, particularly enemy snipers.

(5) **Consolidation**. Snipers will be employed as per any consolidation and will provide over-watch and flank security tasks. They may also be deployed outside of any consolidation area in order to provide early warning and engage targets of opportunity.

d. Snipers employed in a defensive posture in an urban area should be positioned in buildings that offer the best long range fields of fire and all round observation. They are assigned various missions such as counter-sniper fire, firing at key targets, denying the enemy access to certain areas or avenues of approach, providing fire support over barricades and obstacles, surveillance of the flank and rear areas, supporting counter-attacks, and preventing enemy observation.

SNIPER POSITIONS

98. Sniper success or failure in an area, including urban areas, will greatly depend on each sniper's ability to place accurate fire on the enemy with the least possible exposure to enemy fire. Consequently, the sniper must constantly seek suitable firing positions, and must use them properly when found. There are two types of firing positions:

a. **Hasty Position**. A hasty firing position is normally occupied in the attack or the early stages of the defence. It is a position from which a sniper can place fire upon the enemy while using available cover to gain some degree of protection from enemy fire. Some of the more common hasty firing positions in a built-up area and techniques for occupying them are:

(1) **Firing from Corners of Buildings**. The corner of a building provides cover for a hasty firing position if it is used properly. A sniper must be capable of firing from either shoulder to minimize body exposure to the enemy. A common mistake when firing around corners is firing from the standing position, because the sniper is exposed at the height the enemy would expect a target to appear and risks exposing the entire body to the enemy.

(2) **Firing from Behind Walls**. When firing from behind a wall, the sniper must fire around cover when possible, not over it.

(3) **Firing from Windows**. In a built-up area windows provide readily accessible firing ports. However, the sniper must not allow a weapon to protrude beyond the window, since it is an obvious sign of the firer's position, especially at night when muzzle flash can easily be observed. A sniper should be positioned as far back into the room as possible to prevent muzzle flash from being seen. The sniper should fire from a supported position (e.g. table and sandbag) low enough to avoid silhouetting. Room shadow should be used during darkness, and blinds or shades should be drawn to the maximum to avoid being observed.

(4) **Firing from an Unprepared Loophole**. The sniper may fire through a hole made in the wall, thus avoiding windows. He should stay as far from the loophole as possible so that the muzzle does not protrude beyond the wall, thus concealing the muzzle flash.

(5) **Firing from the Peak of a Roof**. The peak of a roof provides a vantage point for snipers, increasing their field of vision and the ranges at which they can engage targets. A chimney, a smokestack, or any other object protruding from the roof of a building can reduce the size of the target exposed and should be used as cover.

(6) **Firing when No Cover is Available**. When no cover is available, sniper exposure can be reduced by firing from the prone position, firing from shadows, presenting no silhouette against buildings, no sky-lining, etc. and utilizing available natural foliage such as tall grass, weeds or shrubbery for concealment.

b. **Prepared Positions**. A prepared position is one built or improved to allow the sniper to engage a particular area, avenue of approach, or enemy position while reducing exposure to return fire:

(1) A chimney, or any other structure protruding through the roof of a building, provides a base to build a sniper position. Part of the roofing material is removed to allow the sniper to fire around the chimney while standing inside the building, on beams or a platform, with only head and shoulders above the roof (behind the chimney). Sandbags are used on the sides of the position to protect the sniper's flanks.

(2) When preparing a sniper position on a roof that has no protruding structure to provide protection, the position should be prepared underneath on the enemy side of the roof. A small piece of roofing material should be removed to allow the sniper to engage targets. The position is reinforced with sandbags and prepared so that the only sign that a position exists is the missing piece of roofing material. Other pieces of roofing should be removed to deceive the enemy as to the true sniper position. The sniper should not be visible from outside the building.

(3) The sniper position must never be subjected to traffic from other personnel, regardless of how well the sniper is hidden. Traffic will invite observation, and the sniper may be detected by optical devices.

(4) Barricaded windows or fortified loopholes may also be used as a prepared sniper position if a position on the roof cannot be built.

c. Other considerations for selecting and occupying sniper firing positions are:

(1) Make maximum use of available cover and concealment.

(2) Carefully select a new firing position before leaving an old one.

(3) Avoid setting a pattern. The sniper should fire from both barricaded and non-barricaded windows.

(4) Abandon a position from which 2 or 3 misses have been fired, since detection is almost certain.

(5) Certain situations may justify snipers operating from separate positions, e.g. when the detection of two snipers in close proximity is very probable. Snipers should position themselves where they can provide mutual support while maintaining observation on their primary area of responsibility.

(6) Select alternate positions as well as supplementary positions to engage targets in any direction.

(7) Always plan the escape route ahead of time.

(8) Minimize the combustibility of selected positions (fire proofing).

(9) If at all possible avoid placing observation posts or firing positions on either rooftops or in the corners of buildings. Neither of these locations provides suitable protection.

SNIPER PLANNING CONSIDERATIONS FOR URBAN AREAS

99. When conducting operations in an urban environment consider the following:

a. **Enemy Situation**:

(1) permissive-lenient;

(2) semi-permissive; and

(3) non-permissive.

b. **Friendly Situation**:

(1) external support available; and

(2) quick reaction force accessibility.

c. **Location of Hostiles**:

(1) approximate area;

(2) approximate building;

(3) approximate floor; and

(4) approximate room.

d. **Locations of Possible Hide Sites around Objective Area**:

(1) Suitable Structures:

(a) attic;

(b) crawl spaces;

(c) room;

(d) warehouse;

(e) business office;

(f) parking garage;

(g) adjacent structures; and

(h) out buildings, watercraft tied up at docks, etc.

100. During recent operations most surveillance conducted by snipers has been in an urban environment. Inserting snipers into position requires extended battle procedure time, normally 24–48 hours. This time is required to conduct a detailed reconnaissance for suitable hide locations, alternate locations, and routes in and out. When selecting possible buildings or structures the following should be considered:

a. The building or structure has:

(1) limited ground floor access;

(2) suitable vantage points over intended target area;

(3) availability of natural loopholes;

(4) attic space;

(5) windows; and

(6) clear escapes routes.

b. Time must be taken to determine local habits in the area, foot traffic patterns, children's play habits (children are the biggest compromise threat), and unexploded ordnance. Once a suitable location(s) has been identified the following sequence of events will take place:

(1) Coordination with supporting unit(s).

(2) Orders to the section (the orders process and battle procedure will be minimized if the entire section is used in the planning process).

(3) Insertion conducted during silent hours of darkness (normally 2300–0400). The covering force should be in place to cover sniper movement into position. The covering force will remain in position if the threat level is high and act as a radio relay if required, or may move into their selected hide once the occupation is complete. If the sniper section is heavily tasked, the supporting unit may be tasked as the covering force and or radio relay as required.

(4) The building or structure will not be considered occupied until it has been physically cleared using night vision devices.

(5) Construction of the hide will only be started when snipers are in position and consider the area safe. Black mosquito netting and a black background drop cloth are carried along with gun tape and 550 cord. If the room is furnished and visible from other vantage points the existing furniture should not be disturbed.

(6) After initial construction is completed, observation begins and an observation post report is sent.

(7) Any sniper who is not involved in observation will continue to improve the position as well as ensure local security is maintained. There will be a need to restrict access to the hide by either sealing off doorways and windows, or booby-trapping other entry points such as mouse holes, stairways, etc. to provide early warning.

(8) All snipers must be aware of the withdrawal/escape plan. Alternate positions which have been reconnoitered must be detailed and routes designated.

(9) Once the sniper commander is satisfied, hide routine will begin. Report should be submitted according to scheduled timings, using consolidated SITREPs. Snipers must be prepared to offer sniper commentary as required.

(10) When tasks are longer than 72 hours in duration, consideration should be given to using 3 to 4 personnel in the hide. Snipers must be self-sufficient and re-supply by "Dead Letter Box" only in an emergency. Provision must be made for urination and defecation (empty jerry can, plastic sealable bags, etc).

(11) Extraction from the position should be conducted under the cover of darkness whenever possible. Once again a covering force should be in position to support the extraction. The team will extract itself to a designated pickup point, and then be returned to friendly lines.

(12) The initial debrief will be conducted by the unit Master Sniper in the sniper lines. On completion the intelligence officer will conduct a debrief in a secure location with the Master Sniper and all snipers present.

CAMOUFLAGE IN URBAN AREAS

101. Buildings provide numerous concealed positions. Thick masonry, stone or brick walls offer excellent protection from direct fire and provide concealed routes. If the tactical situation permits, snipers should inspect their positions from the enemy's viewpoint. The following should be considered:

a. To camouflage properly, the sniper must study the surroundings in the area. The position should be made to look like the surrounding terrain. If there is no damage to buildings, loopholes for firing ports should not be made.

b. The sniper will use only the materials needed, since excess material can reveal the position. Needed materials should be gathered from a wide area. For example, if the sniper were defending the city park, all of the park would be used for resources, not just a small area near the position.

c. The sniper should conduct routine checks to see if the camouflage remains natural looking and actually conceals the position.

d. The sniper should not remove clothing, since exposed skin reflects light and attracts the enemy's attention:

102. When using urban camouflage techniques, the sniper should consider the following:

a. **Shadows**. Buildings in urban areas cast sharp shadows. The sniper should use shadows to aid in concealment during movement. Lighted areas around windows and loopholes should be avoided. A lace curtain or piece of cheesecloth provides additional concealment to snipers in interior rooms if curtains are common in the area.

b. **Colour and Texture**. The need to break up the silhouette of helmets and individual equipment exists in urban areas as elsewhere. In urban areas, however,

burlap or canvas strips are a more effective camouflage than foliage. Predominant colours normally are browns, tans, and sometimes greys, rather than greens, but each camouflage location should be evaluated.

c. **Dust**. A wet blanket, canvas, etc., should be used within weapons emplacements to keep dust from rising when weapons are fired.

d. **Background**. The sniper should pay attention to the background to ensure that he is not silhouetted or skylined, but blends into the surroundings.

e. **Common Camouflage Errors**. To defeat enemy urban camouflage, the sniper should look for errors such as tracks or other evidence of activity; shine or shadows; an unnatural or peculiar colour or texture; muzzle flash, smoke or dust; unnatural sounds and smells; and, finally, movement.

f. **Deception**. Dummy positions can be used effectively to distract the enemy and make him reveal his position by firing.

g. Urban areas afford cover, resources for camouflage, and locations for concealment. The sniper should follow these basic rules for cover, camouflage, and concealment:

(1) Use the terrain and alter camouflage habits to suit the surroundings.

(2) Do not forget deceptive camouflage of buildings.

(3) Continue to improve your positions. The sniper should reinforce fighting positions with sandbags or other ballistic absorbing materials.

(4) Do not upset the natural look of the area.

(5) Do not make your positions obvious by clearing away too much debris for fields of fire.

(6) Choose firing ports in inconspicuous spots when available.

103. Remember that a sniper who uses cover and concealment well will have a significant advantage over a sniper that does not.

URBAN MOVEMENT TECHNIQUES

104. Movement in urban areas is one of the first fundamental skills that a sniper must master. Movement techniques must be practiced until they become second nature. To minimize exposure to enemy fire, the urban sniper:

a. is not silhouetted, but keeps low at all times;

b. avoids open areas (streets, alleys, parks);

c. selects the next covered position before moving;

d. conceals movement by using smoke, buildings, rubble, or foliage;

e. advances rapidly from one position to another, but not so rapidly to create dust clouds or the enemy will locate him;

f. does not mask covering fire; and

g. remains alert, ready for the unexpected.

105. Specific movement techniques used frequently in urban operations must be learned by all snipers. They are:

a. **Crossing a Wall**. After the sniper has reconnoitered the other side, quickly roll over the wall, keeping a low silhouette. Speed and a low silhouette will deny the enemy a good target.

b. **Moving Around a Corner**. Corners are dangerous. The area around the corner must be observed before the sniper moves beyond the corner. The most common mistake that a sniper makes at a corner is allowing his weapon to extend beyond the corner, exposing his position. Also, a sniper should not show his head at the height an enemy soldier would expect to see it. When using the correct technique for looking around a corner, the sniper lies flat on the ground and does not extend his weapon beyond the corner of the building. The head is exposed (at ground level) only enough to permit observation around the corner.

c. **Moving Past Windows**. When using the correct technique for passing a window, the sniper stays below window level, taking care not to be silhouetted in the window, and hugs the side of the building. Enemy inside the building would have to expose themselves to fire from another position if they wished to engage the sniper.

d. **Moving Past Basement Windows**. When using the correct procedure for negotiating a basement window, the sniper stays close to the wall of the building and steps or jumps past the window without exposing his legs.

e. **Using Doorways**. Doorways should not be used as entrances or exits. If a sniper must use a doorway as an exit, move quickly through it to the next covered position, staying as low as possible to avoid silhouetting.

f. **Moving Parallel to a Building**. At times, it may not be possible to use interiors of buildings for a route of advance. To correctly move along the outside of a building, the sniper hugs the side of the building, stays in the shadows, presents a low silhouette, and moves rapidly to the next position.

g. **Crossing Open Areas**. Open areas such as streets, alleys and parks should be avoided whenever possible. However, they can be crossed safely if certain

fundamentals are applied by the sniper. In using the correct method for crossing an open area, the sniper may employ smoke between buildings to conceal his movement, then crossing the open area at the shortest distance between two points.

106. Before moving from one position to another, a sniper should make a visual reconnaissance and select the next position that will give the best cover and concealment. At the same time, the sniper should select the route to be taken to that position, taking care to use existing cover and concealment. The sniper pair should not move together when crossing from one building to another or across an open area, but support each other's movement.

BUILDING ENTRY TECHNIQUES

107. When entering a building in urban combat in support of security or other operations, a sniper may be required to enter without using doorways or reach top floors without using stairs. Various means, such as ladders, drainpipes, vines, helicopters, or the roofs and windows of adjoining buildings, may be used to reach the top floor or roof of a building. Snipers may use the following aids and methods to accomplish this:

a. The two man lift, supported and unsupported; the two man lift with heels raised; the one man lift; the two man pull; and individual climbing techniques are more commonly used to gain entry into areas at lower levels.

b. Ladders or grappling hooks with knotted scaling ropes attached can be used by a sniper to scale a wall, swing from one building to another, or gain entry to an upstairs window.

c. Rappelling is a combat technique that snipers can use to descend from the roof of a building to other levels or a window.

WEAPONS CHARACTERISTICS AND THE EFFECT OF URBAN AREAS

108. The characteristics of built-up areas and the nature of urban warfare directly affect sniper systems and the way in which they may be employed. The following factors must be considered by snipers during urban operations:

a. **Structural Configuration of Buildings**. The basic structures encountered in a built-up area can generally be classified as concrete, masonry or wood. However, any one building may include a combination of these materials. All buildings offer concealment, even though the degree of protection varies with the material used. At 200 m, the 7.62 mm ball cartridge will penetrate:

(1) 127 cm of pinewood boards;

(2) 25 cm of loose sand; or

(3) 8 cm of concrete.

b. **Firing Ranges and Angles**. Engagement ranges may vary from distances of less than 100 m up to the maximum effective range of the sniper system. Depression and elevation limits may create dead space. Target engagement from oblique angles, either vertical or horizontal, demands increased marksmanship skills.

c. **Visibility Limitations**. Added to weather conditions that limit visibility are the urban factors of target masking and increased dead ground caused by buildings and rubble. Obstruction from smoke and dust, and concealment offered by shaded areas, rubble, and human-made structures, influence visibility.

OPERATIONS IN MOUNTAINS

109. Mountainous terrain is characterized by a marked difference in elevation with steep slopes and valleys over an extended area. It may include built-up areas and plains between mountain ridges, plateaux, passes and the mountainsides themselves. Weather conditions are unstable and can change rapidly in these regions.

110. Sniper success in mountain terrain is usually achieved through the occupation of dominating terrain, such as mountain and ridge tops, valley outlets, mountain passes, defiles and routes. Many of these features have canalizing effects and once the sniper has determined the range to them he can inflict casualties and demoralize the enemy at will. With the sniper's ability to conceal himself and the difficult nature of the terrain multiple enemy targets can be engaged from individual positions with limited fear of compromise.

111. Advanced marksmanship is another advantage that the sniper possesses in mountainous regions. Knowledge of non-level shooting and the gravitational effects of shooting at altitude are a must for single shot reductions, and is an invaluable combat multiplier for commanders preparing their forces for mountain operations.

SECTION 6
COUNTER-SNIPER OPERATIONS

GENERAL

112. Counter-sniper operations are designed specifically to eliminate enemy snipers. These operations must be thoroughly planned by the snipers involved. This is a battle between two highly trained soldiers, each knowing the capabilities and limitations of the other. In order to determine the sniper threat and the requirement to conduct counter-sniper operations, the sniper will need to obtain the following information from the unit operating in the area:

a. Have unit personnel seen enemy soldiers wearing special camouflage uniforms?

b. Have unit personnel seen enemy soldiers carrying weapons that have long barrels, mounted scopes, or bolt action receivers, or are carried in weapon cases or drag bags?

c. Has the unit had single shot reduction of key personnel (commanders, senior NCOs or weapons crews)?

d. Were there marked reductions in enemy patrolling activities during the times of single shot reductions?

e. Have unit personnel detected reflections of light off optical lenses?

f. have intelligence or reconnaissance reported small groups of enemy personnel (1 to 3 personnel) through visual sightings or tracking?

g. Have single expended casings such as the 7.62 x 54 mm been found?

113. **Planning a Counter-sniper Operation**. Once the sniper has determined that an enemy sniper is operating in the area, the best method to use to eliminate the enemy sniper must be determined. To do this the sniper will:

a. **Gather Information**. In order to eliminate the threat, the sniper must gain as much information as possible concerning when and from where the enemy sniper has fired. Some information gathering techniques are as follows:

(1) **Information from Witnesses**. Talk to soldiers who have been under fire from the sniper to gain information on what happened when, and from where (e.g. Did anyone see the enemy sniper?).

(2) **Examine Wounds**. By examining wounds of friendly soldiers, the direction from which the gunfire came may be determined.

(3) **Crack-thump**. Remember that the longer the time between the crack of the bullet and the thump of the rifle, the farther away the enemy sniper is. A general rule is that a gap of 1 second equals 300 m. By shooting a bearing to the thump from different locations, it may be possible to triangulate the enemy sniper’s position.

(4) **Bullet Holes**. If it is possible to locate a bullet hole in a suitable surface such as wood, inserting a cleaning rod will point toward the enemy sniper’s location. The steeper the angle of the rod, the farther the range to the enemy sniper (however take into consideration the possible elevation of the firer).

(5) **Determine the Type of Round Fired**. Bearings and distances to likely firing positions within the effective range of the type of round fired can then be recorded.

b. **Determine Any Patterns**. The sniper will evaluate the information gathered to detect any patterns or routines the enemy sniper has established. The sniper should conduct map reconnaissance, study air photographs and conduct a ground reconnaissance to determine any patterns in travel. The sniper must place himself in the enemy's shoes and ask "How would I accomplish the mission if I were him?"

c. **Plan Actions**. Once a pattern or routine is detected, the sniper will determine the best location and time to engage the enemy sniper. The sniper should also request the following actions:

(1) coordination of routes and fire plan with the unit in the area;

(2) additional pre-plotted targets (fire support);

(3) infantry support to channel or ambush the sniper;

(4) additional teams for mutual supporting fire;

(5) someone to bait likely engagement areas to deceive the enemy sniper into committing himself by firing; and

(6) all elements be in place no later than 12 hours before the expected engagement time.

d. During a counter-sniper operation, the sniper must ignore the larger battle going on around him. He must concentrate on his one objective: the enemy sniper.

114. **Active Counter-sniper Measures**. When an enemy sniper is operating in a unit's area, the sniper section should employ active measures to protect the unit against sniper fire. Examples of these measures are:

a. Gather information.

b. Make your plan.

c. Observe likely locations.

d. Locate the enemy through observation. Stalking and/or tracking the enemy are the less favourable options.

e. Kill the enemy sniper. Consider options other then just using your own sniper fire. Depending on the situation, fire from a Mobile Gun System or other options may be the answer.

115. **Passive Counter-sniper Measures**. The following are examples of unit level passive counter-sniper measures:

a. Do not stick to consistent routines, such as meal times, ammunition re-supply times, assembly area procedures or any day to day activities.

b. Conduct all meetings, briefings, or any gathering under cover or during limited visibility.

c. Cover or conceal all equipment.

d. Remove rank. Do not salute officers. Leaders should not present authoritative mannerisms.

e. Increase the unit's observation capabilities, such as observation posts.

f. Brief patrols to look for single expended rounds, different camouflage materials, and so forth.

g. While performing the above actions, do not make it apparent that you are aware of a sniper's presence.

h. Do not overlook women. An estimated 50% of snipers in many third world countries are women. Patrols and observation posts should not be misled if they see a woman.

116. **Conducting a Sniper Threat Analysis**. Commanders may request that any sniper conduct a sniper threat analysis. This is done particularly in operations other than war to protect vulnerable locations such as a unit's camp, diplomatic meetings, visiting VIPs, etc. In order to conduct a sniper threat analysis, the sniper uses the following procedure:

a. The sniper gathers information on the threat by asking unit intelligence staff to collect and analyze the following essential elements of information:

(1) What are the belligerent's military, political, and psychological objectives? This will aid in determining likely target locations and possibly the time an attack would take place.

(2) What is the belligerent's level of training? What type of weapons, ammunition, night vision, and tactics is he likely to use? Do not discount other weapon systems such as anti-tank weapons, grenade launchers, machine-guns, and mortars.

b. Using a map of the local area, the sniper draws circles around the possible target area using the effective range of each possible weapon that may be a threat as the radius of the circle. The following is a guide for the effective range of different weapon systems:

(1) **Heavy Sniper Rifles**. Primarily used for shooting materiel targets such as fuel or ammunition storage, parked aircraft, vehicles, radar equipment, etc. Accuracy may be achieved out to 1800 m depending on the size of the

target and environmental and meteorological conditions. Although accuracy at those ranges against personnel is marginal, the psychological impact may be devastating.

(2) **Medium Sniper Rifles**. May be used against either materiel or personnel. A typical .338 calibre round goes subsonic at approximately 1400 m. The effective range again depends on the size of the target and conditions.

(3) **7.62 mm Weapons**. For both NATO and 7.62 x 54R weapons the effective range is 600 m, however accuracy may be achieved out to 1000 m. The SVD sniper rifle is capable of shooting 2 – 3 minute of angle (MOA) groups.

c. From the possible target location(s), the sniper looks for likely enemy firing/hide positions that provide line of sight, camouflage, concealment, escape routes, etc. In short, the sniper conducts an estimate from the enemy's point of view in order to determine likely positions within the likely weapon's effective range.

d. If practical, the sniper should walk any likely enemy fire positions to determine their effectiveness.

e. Panoramic photography of likely positions can be a great asset. Snipers or any other observation post may use them. The soldier compares the ground to the photograph and looks for any changes that may give away a belligerent sniper position.

f. Range cards should be created with locations and distances to likely enemy firing positions. This is done in order allow friendly forces to provide quick observation and/or fire onto a location.

g. After informing the commander on likely enemy firing positions, the sniper should advise on what steps should be taken to prevent a sniping incident. Some options are as follows:

(1) Passive measures including the use of screens to cover vulnerable areas from view. Body armour and armoured vehicles may be effective against the threat.

(2) **Counter-sniper teams**. The worst fear of a sniper is to be hunted by a better-trained and equipped sniper. An overt observation post may be enough to deter a threat, however the covert hide may be a better option.

(3) **Other Observation Posts**. Any soldiers manning observation posts must be educated on what to look for, such as locations and changes in the area of likely firing positions.

(4) **Patrolling**. The sniper is most vulnerable when moving in or out of a final firing position. By employing patrols, standing or otherwise, in a

checkerboard fashion overwatching likely firing positions, it is likely that enemy snipers will be deterred, captured, or killed.

(5) **Air Assets**. Although a sniper may be easily seen from the air, he may seek overhead cover by using foliage, buildings, or a hide.

h. Other factors that must be considered include the following:

(1) All personnel involved must be educated and rehearsed in the rules of engagement for the operation.

(2) An effective communication system controlled by strong leadership must be established in order to prevent death to friendly personnel or civilians by either friendly or enemy fire.

SECTION 7
EMPLOYMENT OF THE LRSW

117. **Employment of the Long Range Sniper Weapon**. With the adoption of a .50 calibre anti-material weapon system the commander can assign sniper tasks that are not within the capability of the MRSW. The increase in range and penetration of the LRSW adds a new dimension to the battle plan.

118. **Aim of material Neutralization**. To allow the commander to directly influence the enemies ability to wage war; denying him the ability to defend against further strategic targeting by neutralizing his most valued protected resources from within enemy held territory or the our forward defensive line.

119. **Mission Planning**. The decision to employ a LRSW sniper team must be based on the current threat and whether suitable targets can be defined within the target area. The sniper team should not be employed where a conventional sniper detachment armed with MRSW can effectively accomplish the mission. Due to the increased size of the sniper team and increased support equipment, transport and means for infiltration must be considered. The added weight and bulk of the LRSW and ancillary equipment limits the team's dismounted speed and distance travelled, so this must be considered when developing the plan. Some missions may require the team to deploy and operate from the Coyote Reconnaissance Vehicle or LAV III, which could provide intimate support and rapid extraction if required. The plan should provide the team the time and means required to insert at a reasonable distance from the objective and to conduct a thorough target area reconnaissance. When possible, a complete description of the intended target should be provided to the team commander so the type and quantity of ammunition can be selected necessary to neutralize or destroy it. In addition to target descriptions, current aerial photographs should be made available so the team commander can determine the type of terrain and indigenous vegetation in the area, as well as suitable positions for maximum standoff range which will still produce desired target effects. The type of target will have a direct influence on how close the team must get to the target to ensure penetration and destruction. When planning the team commander must decide on the direction of approach which will present the best final firing positions (FFPs) that provide effective range, angle of attack, concealment, and security.

For sensitive missions where the objective area contains multiple high priority targets that are well defended the deployment of multiple LRSW sniper teams is a viable option. The unit Master Sniper undertakes all mission planning and coordination, identifying responsibilities for each team and assigning them specific targets if known. On the ground, inter-section coordination and communications is critical to multi-team objectives.

120. **Planning Indirect Fire**. The use of indirect fire in and around the target area in conjunction with sniper team engagement should also be considered in planning. Detailed coordination with indirect fire elements is essential to ensure that the intended target is not obscured by smoke and dust before the engagement. Indirect fire provides the following:

a. Meteorological conditions indicated by smoke drift, i.e. wind direction and strength in the target area.

b. Augmentation to direct destructive engagement of specific targets, by saturating the area and creating collateral damage against non-priority targets.

c. Acoustic deception, if the enemy is employing acoustic detection devices designed to triangulate the sniper's FFP once a shot is fired.

d. A diversion for team extraction after the mission.

121. **Target Analysis**. Once the sniper team has infiltrated into the objective area, they select the best location to observe the target area. As for conventional sniper missions a detailed survey of possible targets within the area must be undertaken and targets prioritized. The commander considers the following factors to determine target selection:

a. tactical value of the target;

b. nature and type of the armour to be breached;

c. active defensive measures employed by the enemy to protect sensitive equipment;

d. collateral destructive potential of the target;

e. location on the target which presents the least resistance with maximum disruption to components;

f. angle of fire in relation to target;

g. maximum range from target which will enable penetration and behind target effects; and

h. selection of ammunition required to achieve desired effect.

122. Once these factors are taken into consideration, the commander then selects a position, which meets all the requirements to ensure a successful engagement. It is important that the commander considers meteorological and environmental conditions, i.e. wind speed and

direction, which will also influence where the FFP is sited. If the ground and tactical situation dictate, the FFP should be positioned to allow the sniper to shoot at a minimum angle to the wind to minimize bullet drift. An exfiltration and extraction plan must be developed for implementation once the target has been successfully engaged. Selection of routes out normally cannot be confirmed during the mission planning phase due to unknown ground and enemy conditions, which will affect the position of the FFP.

123. **Multiple Team Operations**. For high priority targets dispersed throughout a large defined target area, multiple LRSW teams may be required to ensure complete coverage and simultaneous destruction or disabling. For this type of operation to be successful, it is critical that coordination of teams and resources be as thorough as possible. The assigned mission commander is responsible for dividing the target area and assigning arcs of responsibility to LSRW teams. For command and control on the ground, the commander of the senior team will be designated as the mission commander. Depending on the mission and size of the objective area, teams may be inserted together, or individually, at pre-designated positions that offer the best approach to their target area. The mission commander is responsible for assessing the tactical situation within the target area and determining the best time to initiate the engagement. Depending on the tactical situation, authority may be delegated to teams to engage their specific targets within a set window. By doing so teams can exploit diversionary tactics to confuse and delay the enemy's response, than exfiltrate back to a rendezvous for extraction. The mission commander will control simultaneous fire of the teams either by radio command or timed detonation. Each team will be given specific arcs of responsibility within the target area to select, prioritize and index its targets. It is imperative that teams communicate their location and intended targets to one another to minimize the possibility of fratricide. For an extreme high value target, all teams may be required to engage it to ensure its destruction.

124. Within some anti-material missions, there may be scope to employ both LRSW and MRSW simultaneously. This will depend on the depth of the target area, the threat, and whether suitable targets (e.g. enemy soldiers, lightly protected sensitive equipment) are within MRSW range. When both weapons are firing on the objective, the team commander controls fire in order to observe individual fall of shot and make appropriate corrections.

125. **Anti-material Operations in an Urban Environment**. In an urban environment LRSW employment depends on whether there are suitable targets within range which will best exploit the potential of the weapon. Deploying a LRSW team on missions more suited to MRSW could expose the team to greater potential for compromise if they have to fire from a forward hide on the edge of or within enemy position. LRSW teams are best employed occupying key terrain outside the urban center, targeting exposed sensitive equipment, weapon systems, communication arrays, fortified positions, firing ports, and human targets of opportunity. Due to how sound waves travel in built-up areas, a LRSW firing from outside the urban center will be very difficult to locate. This will allow the team to take advantage of multiple engagements from the same FFP with minimal likelihood of being detected prematurely. For large metropolitan cities, the possibilities for employing LRSW teams within built-up areas are greater. By taking advantage of high-rises, skyscrapers, or other prominent structures within friendly held sectors, the LRSW team can position themselves to provide accurate direct fire deep into enemy dominated areas. If the LRSW team decide to utilize hides in prominent structures, they must ensure that measures are taken to reinforce the wall facing the enemy within the room they have

selected. Alternate fire positions, overhead protection, and a high speed evacuation route to another part of the complex, or out of it in case of direct or indirect fire, must also be considered.

SECTION 8
OPERATIONS AT NIGHT AND DURING RESTRICTED VISIBILITY

GENERAL

126. Snipers are capable of operating in all weather conditions, day or night. Sniper night operations are defined as any operation in which the sniper conducts surveillance, overwatch, probing, or offensive operations in a low light environment. With the advent of advanced night vision devices and thermal imagery, all operations normally conducted by day can effectively be undertaken by night, however the sniper must be aware that night operations no longer afford him the advantage and security of being "invisible". With the proliferation of night vision devices throughout the world's armed forces, there is a high probability of encountering an enemy with the same night capabilities as you. The following section will address equipment, tactics and procedures for sniper night operations in all operations.

NIGHT VISION DEVICES

127. Night vision devices give the sniper the ability to operate in low light conditions with increased situational awareness of the perceived threat and environmental surroundings. They provide the sniper with a greater range of operation.

128. The threat to snipers at night is due to many different devices, and snipers should be aware of the different characteristics they possess and how to defeat them. Counter surveillance measures to defeat night vision aids are detailed in later paragraphs.

129. The use of night operating aids during the hours of darkness will improve the sniper's tactical capabilities. These devices should be employed to best facilitate accomplishing the sniper's mission. Leaders should consider the time required to attain night vision and to employ night vision devices effectively. Night vision devices increase the effective range of the eye at night. Note the following:

a. night vision devices can be used to detect the enemy's use of infrared light;

b. infrared light used to illuminate a target area normally cannot be detected by the unaided eye beyond 10 m from the light source;

c. night vision devices for weapons can be dismounted and hand held for other purposes (e.g. surveillance); and

d. night vision devices can be used to aid movement.

130. Improperly used, some night vision devices can be detected. Snipers using these devices must be thoroughly familiar with techniques of operation and equipment limitations, since

detection by the enemy will disclose our positions and compromise the mission. Some major limitations are:

a. infrared light can be detected and the source located by the enemy with night vision devices (active versus passive);

b. infrared light is subject to physical counter-measures such as chemical smoke or illumination;

c. night vision devices are line of sight equipment;

d. all night vision devices are affected by bad weather conditions (e.g. if the objective lens gets fogged or wet the image will be distorted);

e. some night vision devices are adversely affected by bright light; and

f. prolonged use produces eye fatigue.

PLANNING FOR NIGHT OPERATIONS

131. Before departing on any assigned mission, the sniper commander should always thoroughly plan for the mission. Thorough planning is even more important for night operations. Planning for the night sniper mission should account for all events from departure of friendly lines (or insertion) to re-entry of friendly lines (or extraction). The following principles for night sniper missions should be covered in the commander's plan (these principles could also be used for day sniper missions):

a. **Planning**. Plan all events from the departure or insertion to the debrief. Always anticipate and prepare for possible difficulties.

b. **Security**. Provide in all phases of the mission, never less than 50%, and, if possible, always 360°.

c. **Control**. Plan all required communications, emergency actions, team leader's control, and other control measures.

d. **Reconnaissance**. Conduct a visual or fly over reconnaissance if possible. Use maps, photos and air photos, and reports from previous patrols and debriefs.

132. Team leaders when planning for night operations should particularly consider the following points:

a. primary and alternate routes to be taken, and terrain to be covered;

b. navigation and navigational aids;

c. weather, illumination, twilight, moonlight etc;

d. as much information as possible on the enemy situation, observation posts, sentries, etc.);

e. distance and time to target, load weights;

f. coordination, passage of lines, other patrols, direct or indirect fire support, etc;

g. night observation devices;

h. method of control and communications; and

i. emergency actions, contact drills, flares, etc.

PREPARATION AND INSPECTIONS

133. Regardless of what type of mission a sniper is conducting, prior preparation, inspection and rehearsal are paramount to success, especially for a night mission. The following should be taken into account:

a. **Uniform**. Ghillie suit (if required), comfortable night camouflage (loose and comfortable combat clothing), weather requirements (Gortex if required).

b. **Equipment**. Silenced, no shine, comfortable, placement, access, accountability, dummy cords, operate by feel, inspect for serviceability and operability.

c. **Camouflage**. Face and hands, no shine, natural and human-made, not restricting body or equipment functioning, cover from head to toe.

d. **Weapons**. Swivels silenced, hand guards taped, camouflage, operate by feel, night sights, dummy cords and other weapons, e.g. pistols and garrotte.

e. **Inspections**. At least two full dress inspections, one just prior to departure; inspect for serviceability, operability, sound, shine, smell; inspect from head to toe.

f. **Rehearsals**. By day and night. Never assume something will work unless it has been rehearsed.

NIGHT MOVEMENT AND STALKING

134. The following points should be considered:

a. Allow at least 30 minutes for eyes to adjust to the dark.

b. To distinguish an object in the dark use offset vision or get low to the ground in order to skyline the object.

c. Rely on other senses, such as touch, smell and hearing.

d. Use weather conditions to help mask movement (e.g. fog, haze, mist).

e. When low crawling, lift your entire body off the ground to avoid shuffling sounds.

f. Avoid silhouetting.

g. On halts, ensure you keep kit well organized and at arms length.

h. Use your free hand to feel for trip wires.

i. Use supporting fire to help mask movement.

j. At halts, provide security, conduct administration, and listen before moving off.

k. Be aware of enemy counter-infiltration.

l. Use night observation devices to assist movement.

m. Ensure you leave enough time on target to cover the entire objective.

n. Use proper movement techniques on the appropriate ground.

o. Communication and control.

p. Keep load weight realistic for the task.

q. Always be aware of the proximity of the enemy.

r. **Navigation**. Maintaining direction is difficult, especially when in the prone position.

s. **Ground surveillance radar**. Move during gusts of wind, shell bursts, etc. in order to help mask movement. Radar usually requires a ground speed of approximately 5 mph, thus slow deliberate movement will get snipers past most radars.

t. The enemy also possesses thermal imagery assets.

u. Hearing is intensified at night; silence is vital.

NIGHT HIDE ROUTINE

135. The sniper commander for all activities, but especially at night, must stress planning and rehearsals. Once snipers have made it to their hide, all must know their responsibilities and

make no unnecessary movement, sound or actions, which may compromise the position. Points to consider are:

a. construction of the hide (materials, tools, security);

b. equipment placement and accessibility;

c. duration in the position;

d. urination and defecation;

e. verbal and radio communication;

f. security while sleeping, and stand to;

g. operation of all equipment in darkness (e.g. claymores, weapons); and

h. how and when to depart the hide.

NIGHT SHOOTING

136. Successful target engagement at night requires the use of either night vision devices or artificial illumination. Night shooting must be practiced frequently in order to become proficient. Shots made during twilight will provide the sniper with better security than during daylight. Sniper commanders should consider the following:

a. natural illumination available (moon, stars, ambient light);

b. artificial illumination available (pyrotechnics, mortars, or artillery);

c. night vision devices;

d. method of range estimation;

e. method of wind rating for direction and speed;

f. method of target identification; and

g. weapon signature, i.e. can it be reduced using supporting fire or diversions.

CHAPTER 3
SNIPER EQUIPMENT

SECTION 1
THE SNIPER RIFLE C3A1
(Medium Range Sniper Weapon)

INTRODUCTION

1. The sniper rifle 7.62 mm x 51 mm C3A1 has been introduced into service to provide snipers with a weapon that can deliver highly accurate fire against point targets at ranges up to 800 m during the day and the limit of night visibility at night. It is rugged and performs well under extreme climatic conditions.

2. The diagrams in Annexes B to H should be consulted when reading this chapter to facilitate understanding of the rifle's mechanical operation.

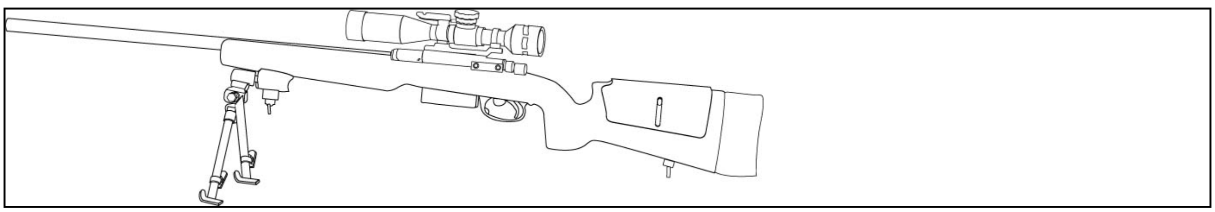


Figure 3-1: C3A1 (Right Side)

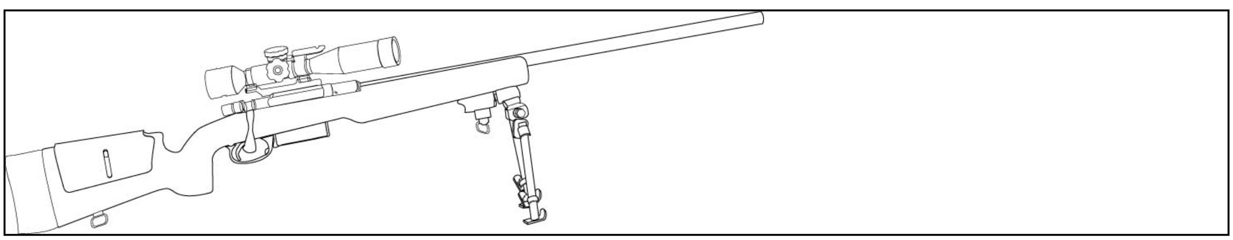


Figure 3-2: C3A1 (Left Side)

DESCRIPTION

3. **Rifle Action**. The C3A1 incorporates a Mauser type 85 action. It is a very strong, reliable action incorporating a rotating extractor.

4. **Trigger**. The single stage trigger is adjustable for trigger pull (0.9 kg–2.27 kg), backlash and creep.

5. **Free Floating Barrel**. The 600 mm barrel weighs 2.04 kg. It has four lands and grooves with a 1:30.48 cm (1:12 in) right hand twist. The muzzle is recessed to protect the crown. The barrel is fixed to the receiver, which is bonded to the stock by "Marine Bed", a steel epoxy compound.

6. **Stock**. The synthetic stock is a near straight-line design and incorporates a built in pistol grip, forestock, and cheek piece. The butt can be adjusted from 300 mm to 348 mm by the insertion of butt increments. These butt increments, commonly referred to as "shims", are available as 12 mm or 7 mm spacers.

7. **Matched Serial Numbers**. To prevent accidental mixing of weapon parts, the receiver and bolt are stamped with the weapon serial number. The butt increments and magazines are interchangeable.

8. **Moulded Nylon Hand Stop**. The stock is fitted with a steel mounting bracket to mount the moulded nylon hand stop. The hand stop position on the stock is adjustable. The hand stop incorporates a steel bipod spigot to facilitate the mounting of an all steel, adjustable bipod.

CHARACTERISTICS

9. **The characteristics of the C3A1 are as follows**:

   a. It is a bolt action, single shot, shoulder controlled, magazine fed weapon.

   b. It weighs 7.52 kg.

   c. The heavy free-floating barrel weighs 2.04 kg.

   d. The magazine holds five rounds.

   e. The calibre is 7.62 mm x 51 mm NATO.

   f. It is designed so that all operations are done with the right hand.

   g. The stock has a built in pistol grip and a forestock. The butt is adjustable for length as well as having an adjustable cheek piece.

   h. It is fitted with a telescopic sight.

   i. It is fitted with two sling swivels, an adjustable nylon hand stop, and an adjustable/removable bipod to facilitate the use of different firing positions.

SAFETY PRECAUTIONS

10. **Supervised Safety Precautions**. Supervisors order these safety precautions to ensure weapons safety in a group or formal situation (e.g. range, weapon lesson). They may be executed in the standing, seated or prone position:

   a. On the command **FOR INSPECTION, CLEAR WEAPON** the firer will:

      (1) support the weapon with the muzzle pointed in a safe direction;

NOTE
The safety catch can only be placed in the "SAFE" position when the bolt is forward and cocked.

(2) remove the magazine if affixed by pressing forward on the magazine catch (see Figure 3-4);

(3) move the safety catch forward to the "FIRE" position (see Figure 3-3);

(4) cock the bolt to the rear;

(5) hold the magazines to the right side of the weapon so that the weapon and magazines may be inspected at the same time; and

(6) if training rounds are used they are to be confirmed as "Dummy Rounds".

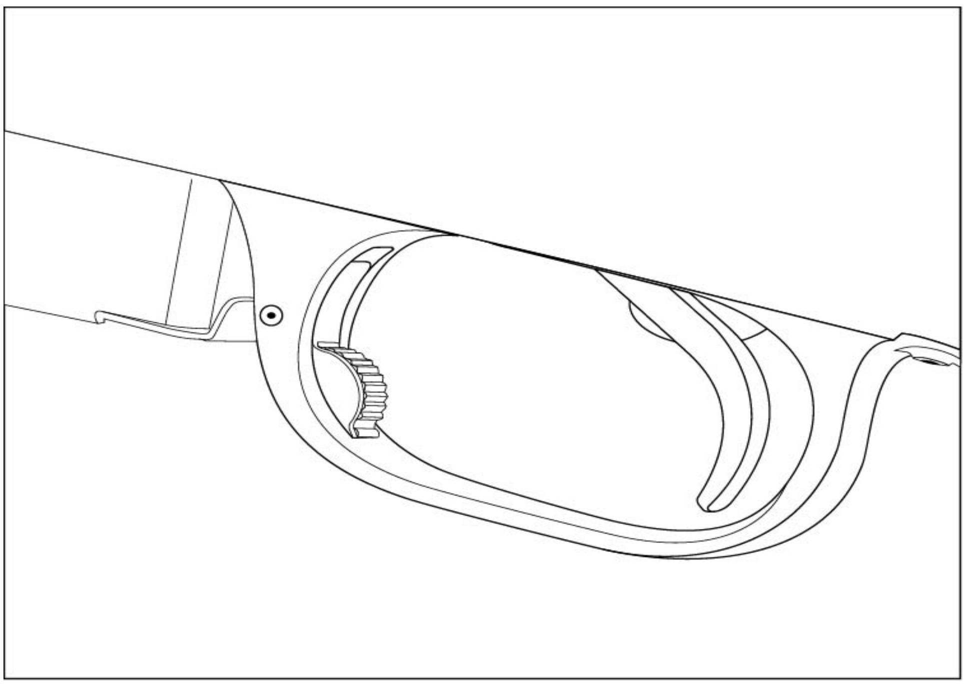


Figure 3-3: Safety Catch

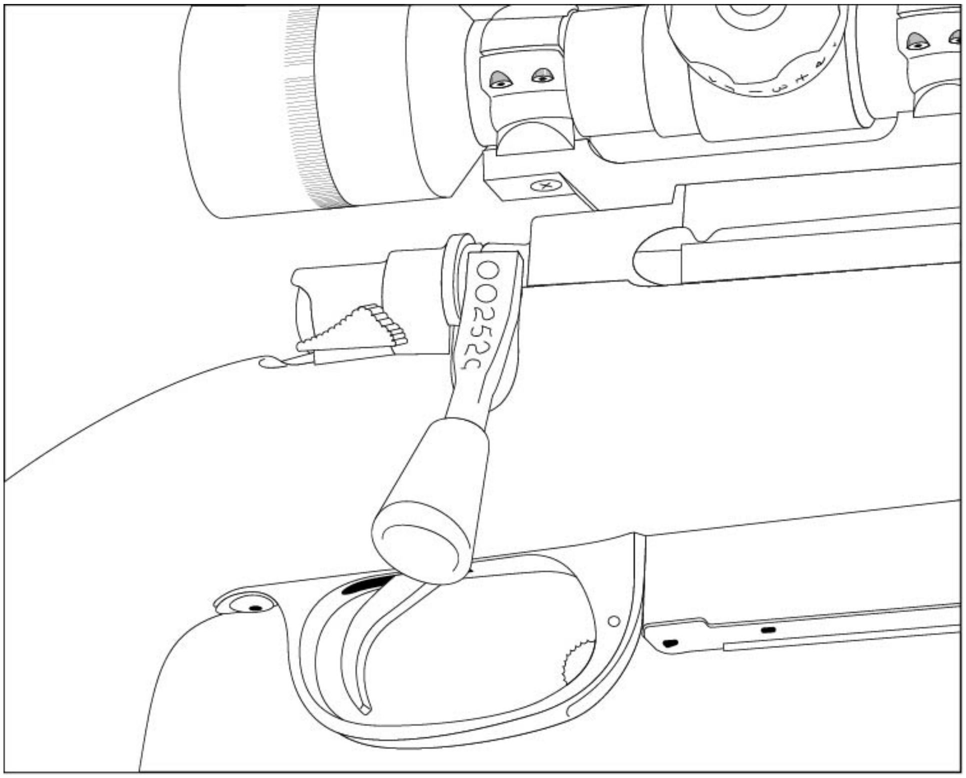


Figure 3-4: Magazine Catch

b. ON the command **CLEAR** the firer will push the bolt forward, operating the trigger while rotating the bolt handle down to the right. (This will prevent firing on an empty chamber and the unnecessary enlargement of the firing pin hole in the face of the bolt).

11. **Individual Safety Precautions**. The sniper executes these safety precautions to ensure weapon safety at the individual level. Procedures are identical to supervised safety precautions except the firer receives no commands and inspects his own chamber and magazines. Individual Safety Precautions will be done:

a. on issue and return to stores;

b. before handing the weapon to another individual;

c. before stripping;

d. when in doubt as to the status of the weapon;

e. before and after range practices; and

f. before and after periods of instruction.

NORMAL STRIPPING AND ASSEMBLING

12. **Stripping**. The sequence for stripping the weapon is as follows:

a. safety precautions are executed (do not reinsert a magazine);

b. the bolt is removed by raising the bolt handle and pulling the bolt to the rear, while depressing the bolt stop on the rear left of the receiver (see Figure 3-5); and

c. the bipod is removed.

NOTE
This is as far as the weapon will be stripped for normal cleaning.

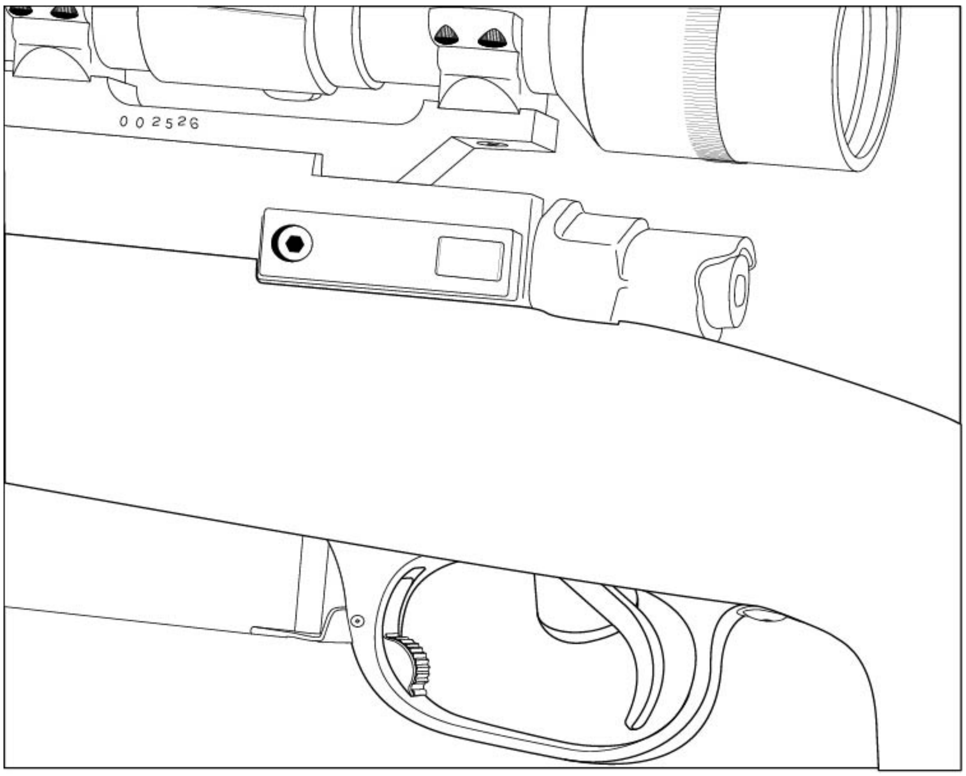


Figure 3-5: Left Receiver Showing Bolt Release

13. **Assembling**. The sequence for assembling the weapon is as follows:

a. Verify that weapon serial numbers are the same on the bolt and receiver.

b. Fit the bipod to the hand stop spigot.

c. To assemble the bolt to the rifle the extractor must be on the RIGHT side of the bolt, directly in line with the rear safety locking lug and the RIGHT front locking

lug. The bolt is fitted into the rifle, pushed forward, and the bolt handle turned down to the locked position while operating the trigger.

"DANGER"
The striker spring is very strong and will require a great deal of pressure to compress it.

STRIPPING AND ASSEMBLING THE BOLT

14. **Stripping**. Strip the rifle as per normal stripping. The bolt is then stripped in the following sequence:

a. Place the sear stop of the cocking piece on a hard surface and exert downward pressure on the bolt, exposing the recess on the cocking piece, and insert a nail or pin in the hole in the cocking piece (see Figure 3-6).

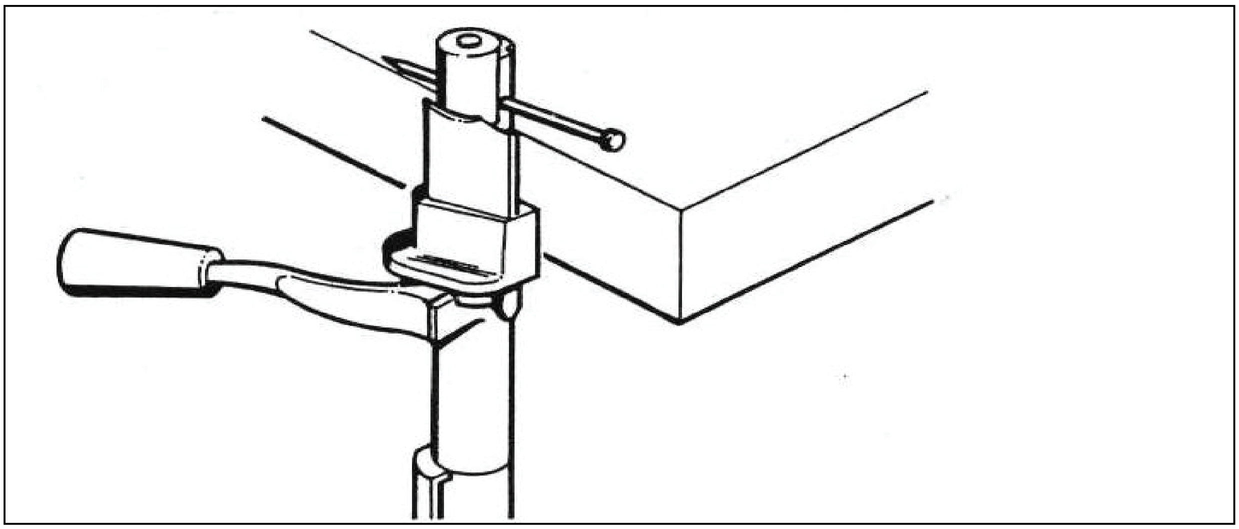


Figure 3-6: Inserting a nail into the cocking piece

b. The bolt sleeve plunger is depressed and the striker assembly unscrewed counter-clockwise.

c. The firing pin is placed against a piece of wood and, holding the bolt sleeve securely, is pressed downwards exposing the cocking piece completely.

d. With the other hand the cocking piece is given a quarter-turn counter-clockwise and lifted off the striker assembly. Firm control of the bolt sleeve must be maintained.

e. The bolt sleeve is allowed to move slowly upwards under pressure of the striker spring and is completely removed.

15. **Assembling**. To assemble the bolt the user simply reverses the procedure for stripping.

16. **Stripping and Assembling the Bolt Sleeve**. To strip the bolt sleeve the user will:

a. Strip the bolt.

b. Press in the bolt sleeve plunger until the pin can be slipped out of the notch. Disengage the pin and withdraw the plunger and spring under control. A small screwdriver or suitable tool can be used to release the bolt sleeve plunger pin from its notch.

NOTE

It may be necessary to guide the base plate along its recess to prevent binding. Do not use excessive force.

c. Assemble in reverse order.

17. **Stripping and Assembling the Magazine**. This is to be done only when absolutely necessary. The sequence is as follows:

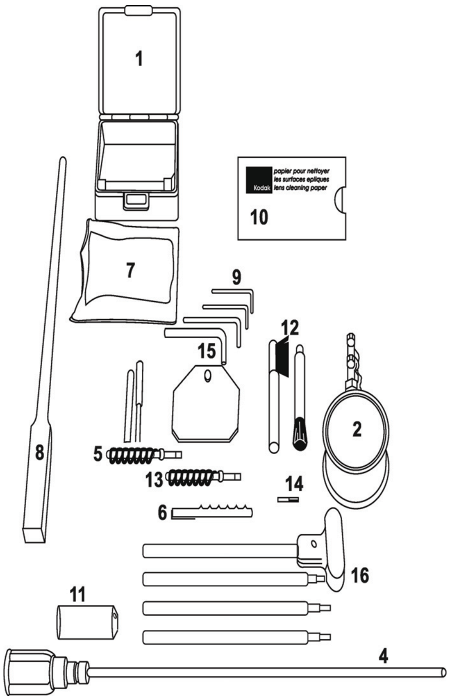
a. Depress the base plate slightly (care must be taken to avoid bending), and remove by sliding it to the rear of the magazine body.

b. The platform and spring are then guided past the lips of the magazine, ensuring that the spring is not stretched.

c. Assemble in reverse order, applying pressure to the platform while inserting the base plate.

CLEANING

18. **Cleaning Kit**. The cleaning kit for the C3A1 sniper rifle contains the following items:



1. Cleaning kit with general purpose weapons oil
2. Bottle with chemical cleaner (Hopps)
3. 7.62 mm brass pull-through
4. Teflon coated bore cleaning rod
5. 7.62 mm bore brush nylon
6. 7.62 mm jag brass
7. Swab cleaning 35 mm x 100 mm
8. Chamber cleaning stick
9. Sight adjustment kit (2 Allen keys 3 mm and 1.5 mm, and a scope spanner wrench)
10. Lens cleaning paper
11. Chamber guide
12. Brush cleaning nylon
13. C3A1 nylon chamber brush
14. nail or pin
15. 3/32 ball Allen driver
16. 4 piece cleaning rod
17. 3/16 bedding allen wrench.

Figure 3-7: C3A1 Cleaning Kit

19. **Normal Cleaning**. The user performs normal cleaning daily to ensure serviceability and prolong the life of the rifle. It consists of the following:

a. Pull the barrel through with a swab moistened with cleaner and allow it to soak for 5 to 10 minutes.

b. Secure a cleaning swab in the slot of the chamber stick and wrap the excess around the end. Insert the chamber stick into the chamber and rotate it several times to remove carbon and metal fouling.

c. Clean the bore using the cleaning rod or pull through. Dry swabs will then be pulled through the barrel until they remain clean. Use the bore brush to remove heavy carbon or metal fouling from the barrel. The bore must be cleaned from the breech end as cleaning from the muzzle end causes wear to the crown. After cleaning, the barrel should be carefully inspected by holding the muzzle close to the eye and looking into the grooves for dirt. The same should be done from the breech end.

d. Clean the receiver interior with oil moistened swabs and the cleaning brush. Inspect to ensure that the locking lug recesses are free of fouling.

e. Remove all chemical cleaners and oil the barrel, chamber and receiver with a clean swab coated with general purpose weapons oil.

f. Clean the magazine, bolt and all exterior metal parts with an oil moistened rag. The cleaning brush should be used to remove dirt or fouling from all crevices. Ensure that the stock is left clean and dry.

NOTE

A round that is used as a tool must not be loaded into the magazine.

20. **Cleaning Before Firing**. The check before firing must be carried out to guarantee first round accuracy and reduce weapon signature. It consists of the following:

a. perform normal cleaning;

b. wipe the bore, chamber, bolt face, magazine platform, and magazine interior free of all oil; and

c. check that all mounting screws are correctly torqued.

21. **Cleaning After Firing**. The same sequence as normal cleaning is used for cleaning after firing, however the firer must consider the following:

a. liberal application of chemical cleaners after firing will loosen carbon deposits for easier cleaning;

b. the weapon will sweat for several days after firing and must be cleaned as per normal cleaning daily; and

c. the weapon must be inspected for faults prior to storing.

22. **Cleaning Under Adverse Climate Conditions**. Cleaning and maintenance standards will vary between climatic conditions. Procedures for cleaning weapons in winter, jungle and desert operations are detailed at Annex I.

HANDLING

23. **Magazine Filling**. To fill the magazine the user:

a. Grasps the magazine upright with the nose of the magazine towards the user.

b. Inserts the rounds individually, base first, pushing each round fully to the rear of the magazine with the thumb.

CAUTION

Do not bang the magazine to seat the rounds, since damage may occur.

c. **Magazine Emptying**. To empty the magazine the user:

(1) Holds the magazine inverted over a clean dry surface.

(2) With a blunt object (nose of a round, finger) pushes on the second round in the magazine, allowing the top round to fall from the magazine. Rounds may also be stripped out of the magazine one at a time.

24. **Load**. On receipt of the command **LOAD** the firer will:

a. Ensure that the weapon is pointed in a safe direction.

b. Inspect the magazine to ensure that the correct ammunition is properly seated in the magazine.

c. Insert the magazine into the magazine housing with a steady pressure until the magazine catch engages into its recess.

d. Test the magazine catch by pulling downwards on the magazine.

25. **Ready or Range**. On receipt of the command **READY** or a range as part of a fire control order the firer will:

a. pull the bolt fully to the rear and push it fully forward as one steady motion; and

b. engage the safety catch by moving it rearward to the "**SAFE**" position, unless firing is imminent.

26. **Firing**. When a target is to be engaged or the command **FIRE** is received the firer will:

a. move the safety catch forward to the "**FIRE**" position to disengage the safety; and

b. apply sniper marksmanship fundamentals.

27. **Unload**. On receipt of the command **UNLOAD** the firer will:

NOTE

The Mauser type rotating extractor is specifically designed to pick up a cartridge which has first been loaded into the magazine. NEVER try to close the bolt over a round in the chamber as this can damage the extractor permanently.

a. remove the magazine;

b. push the safety catch forward to the "**FIRE**" position to disengage the safety;

c. pull the bolt fully to the rear;

d. inspect the receiver and chamber for loose rounds;

e. when the receiver and chamber are clear, push the bolt forward while operating the trigger; and

f. if a round was ejected, recover, clean and replace the round in the magazine.

28. **Make Safe**. On receipt of the command **MAKE SAFE** the firer will:

a. unload; and

b. load.

NOTE

Do not re-insert a magazine.

MECHANISM

29. **Forward Action**. The forward action of the rifle mechanism is as follows:

a. As the bolt is pushed forward, the top round is stripped from the magazine and aligned with the chamber by an inclined surface at the front of the magazine opening. As the base of the round is guided up into line with the chamber it slips up the face of the bolt under the extractor claw and into its alignment recess in the bolt face.

b. As the bolt is pushed forward the cocking piece engages on the sear and is retained to the rear. The striker, being attached to the cocking piece by three sets of locking lugs, is also held to the rear. During the final forward movement of the bolt, the bolt guide rib moves out of its guideway; the bolt sleeve plunger is compressed against the rear bridge section forcing it out of contact with the bolt sleeve; and the bolt handle contacts the cam on the receiver. Thus as the bolt handle is rotated the bolt is free to turn to the right to the locked position. It should be noted that both the bolt sleeve and cocking piece remain upright and do not rotate. During rotation of the bolt handle to the locked position the striker spring is further compressed between the front face of the bolt sleeve spindle and the collar on the striker. The cocking piece and the striker are held to the rear by the sear, which is supported from the underneath by the top of the trigger.

30. **Breech Locking**. As the bolt is turned down to the RIGHT the front locking lugs and the rear locking safety lug enter the inclined grooves in the front and rear of the receiver assembly. The inclined grooves impart a forward movement to the bolt, seating the cartridge in the chamber and locking the breech.

31. **Firing**. When the trigger is pressed, the top end of the trigger is rotated forward and out of contact from the nose of the sear. The sear spring is overcome by the pressure of the striker spring acting through the cocking piece. The sear is rotated downwards away from the contact face on the cocking piece and the striker is driven forward under pressure of its spring. The firing pin protrudes through the face of the bolt and strikes the primer cap of the round.

32. **Rearward Action of the Bolt**. The rearward action of the bolt occurs in the following stages:

a. When the bolt handle is rotated to the horizontal position, the nose of the cocking piece rides up the inclined surface on the rear of the bolt providing striker withdrawal and cocking. At the same time the action of the bolt handle working on its cam path on the rear incline groove provides primary extraction of the empty case, which is held by the extractor claw. During this initial movement the tip of the bolt sleeve plunger moves away from its contact surface allowing the plunger spring to push the plunger forward, locking the bolt sleeve and the bolt to prevent rotation between these parts.

b. As the bolt is pulled to the rear, the bolt guide rib enters its guideway in the rear bridge and prevents further rotation of the bolt. The extractor pulls the cartridge case from the chamber and holds it on the face of the bolt during the rearward movement. The ejector under spring tension rides on the LEFT side of the bolt. When the bolt is 20 mm from the fully withdrawn position the ejector rides up its cam groove in the locking lug and the base of the cartridge case strikes against it. This impact ejects the cartridge case to the RIGHT of the receiver.

c. When the bolt reaches the fully open position, the rearward motion of the bolt is stopped by the LEFT locking lug contacting the bolt stop. The firer must ensure that the bolt is fully open or “short stroking” will occur. When the bolt reaches this position the magazine spring reasserts itself and raises the next round to the position where it can be picked up by the bolt face and chambered. The full bolt operation can now be repeated until the magazine is empty or firing ceases.

33. **Mechanical Safety**. The rifle mechanism provides mechanical safety in the following manner:

a. A round can only be fired when the bolt/breech is fully locked. Although it is possible to operate the trigger/striker as the bolt is being turned down, the striker cannot protrude through the face of the bolt until the bolt is fully forward and the breech is locked.

b. The chamber pressure, after the round is fired, diminishes to a safe level before the firer can open the bolt.

34. **Applied Safety**. The rifle mechanism achieves applied safety in the following ways:

a. the safety catch can only be applied when the action is cocked; and

b. when the safety catch is applied it provides positive triple security as follows:

(1) the trigger lock is over the trigger, preventing rearward movement and operation of the trigger;

(2) the sear lock is under the sear preventing it from being depressed by the cocking piece; and

(3) the bolt lock is engaged in a notch in the bolt to prevent the bolt from opening.

IMMEDIATE ACTION AND REMEDIES

35. **Immediate Action (IA)**. In the event that the weapon fails to fire, the firer will carry out the following IA: Cock the weapon, while observing the ejection opening to determine if a round is ejected.

36. **If no round is ejected**:

a. press up on the magazine to ensure that it is properly affixed to the weapon;

b. look into the receiver to ensure that there are rounds in the magazine and that they are properly seated; and

c. inspect the chamber, and if a live round or empty casing was not ejected, check for broken extractor.

37. **If a round is ejected**:

a. Inspect the base of the round to determine the cause of the stoppage as follows:

(1) **Primer Struck**. Faulty ammunition. Close the bolt, aim and fire.

(2) **Primer Lightly Struck or Not Struck**. Mechanical fault, i.e. possible weak striker spring or broken firing pin:

(a) unload;

(b) prove the weapon clear; and

(c) repair the weapon or replace the part.

SECTION 2
C3A1 TELESCOPIC SIGHT

INTRODUCTION

38. The Unertl telescopic sight facilitates accurate rifle aiming by use of precision ground lenses and a reticle (cross hairs) in a metal tube securely mounted to the rifle receiver. The optical system is composed of a series of glass lenses, which transmit and magnify the target image to the sniper.

DESCRIPTION

39. **General**. The average unaided eye can distinguish a 25 mm object at 100 m. Magnification combined with good optic design can improve the resolution of this object, as an inverse factor of the telescope's magnification. The Unertl telescopic sight, with a fixed 10 power magnification and a field of view of 3 m at 100 m, thus enables the sniper to distinguish detail of 2.5 mm at 100 m.

40. **Light Gathering Capability**. The lenses in the sight are coated with an anti-reflective substance (magnesium fluoride) to enhance light gathering. This substance allows ambient light to enter the sight instead of reflecting off the objective lens. Without this coating, up to 45% of the light entering the objective lens would be reflected. With the high efficiency, low reflective coating on the lenses, approximately 91% of the available light is transmitted to the sniper's eye. This coating is what gives the lenses the blue tint.

41. **Reticle**. The duplex reticle (see Figure 3-8) in the sight provides the sniper with a range finding capability. The dots on the fine cross hair are1 mil apart, from centre to centre, with a total of 5 mils from the centre to the thick post in each direction. Use of the reticle to determine distance is explained in detail in Chapter 4.

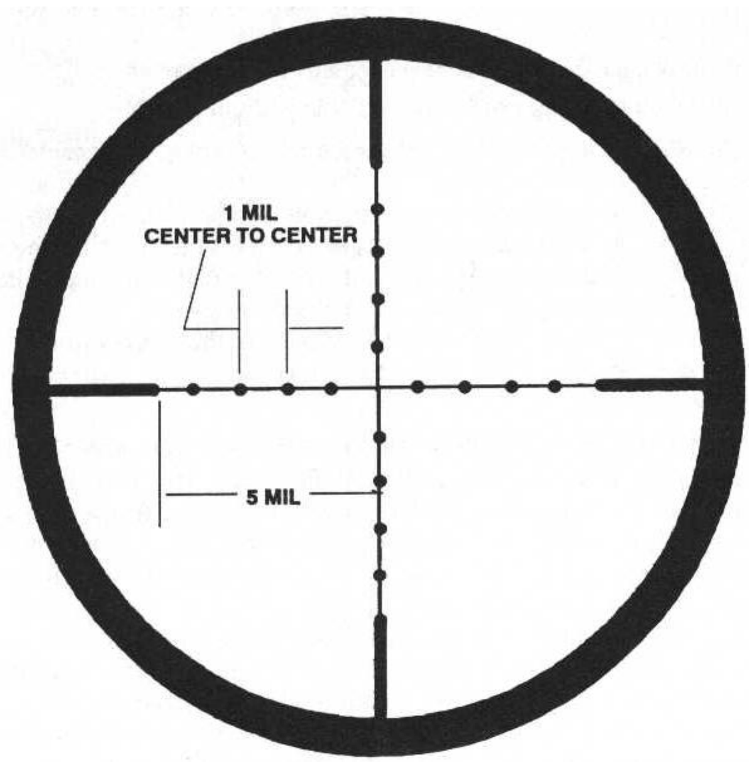


Figure 3-8: Unertl Reticle Pattern

42. **Elevation and Deflection Drums**. The drums are graduated in machined increments to facilitate simple adjustment of the sight settings. Elevation settings are set to the trajectory of the

bullet for the given range with a fine tune of 3 minutes of angle (MOA) up or down in increments of ½ MOA. The deflection drum allows adjustment of 8 MOA left or right in increments of ½ MOA.

TELESCOPIC SIGHT ADJUSTMENT KIT

43. The sight adjustment kit is used to adjust the weapon to the firer and to zero the weapon to the firer. Each sniper section also has one SAC (small arms culminator) for initial boresighting. The kit consists of the following:

a. Unertl lens spanner wrench;

b. Allen key 3 mm;

c. Allen key 1.5 mm; and

d. 3/32 Allen driver.

CHARACTERISTICS

44. The Unertl telescopic sight has the following characteristics:

a. weight 1.04 kg;

b. length 31.75 cm;

c. magnification 10X;

d. eye relief 75 mm;

e. adjustments ½ MOA;

f. duplex cross hair reticle with mils scale; and

g. magnesium fluoride coated lenses.

CARE AND MAINTENANCE

45. To care for the sight the following points must be considered:

a. When placed in the rifle case the rifle should be inserted so that the sight is towards the carry handle. If the case is dropped, there is thus less danger of damaging the sight.

b. The sight should always be protected from the environment to prevent weathering damage to the lenses and adjustment drums.

c. Do not store the weapon in damp conditions. Moisture can collect, and result in rusting and pitting the sight body.

d. Do not allow direct sunlight to shine through the sight as the magnification of the sun's rays directed onto older versions of the scope may cause the reticle and/or the mil dots to melt. Newer versions of the scope have etched reticle patterns.

e. When zeroing, do not over tighten the lock screws or force the drums.

f. Inspect the rubber O-rings periodically to ensure a waterproof seal. The O-ring protects the internal components of the sight from dirt and moisture. At the first sign of looseness or wear, have them replaced.

g. Avoid breathing on the lenses during cold weather to prevent frost from forming.

MOUNTING THE SIGHT

46. The scope mount is attached to the rifle by three screws. The bottom half of the scope ring is affixed to the scope mount. The telescopic sight is placed on the bottom scope ring. At this point the rear upper scope ring is fitted and the SIMRAD mounting post is affixed in place of the front scope ring. To ensure that the scope ring and mounting post are properly mounted, check that the numbers inside each half of the rear scope ring correspond with the other half and that the space between the upper and lower scope ring is equal on both sides of the sight. Also, using the SAC ensure that the reticle is vertical to the axis of the bore of the rifle. As a final precaution “BLUE” loctite is used to secure the sight ring screws.

NOTE

The eyepiece-locking ring must never be completely unscrewed as the scope is assembled in a climate-controlled environment. Loosening the eyepiece-locking ring to its extreme limit will result in a broken seal, which will cause fogging of the scope due to moisture and humidity.

ADJUSTING THE SIGHT TO THE FIRER

47. The sight is pre-focused at production to a uniform focus. However, each sniper's visual ability and acuity is slightly different. If the scope is not properly focused, the sniper can suffer from eye fatigue, which can affect his sight picture. With proper focus both target and reticle will be clear and defined.

48. **Focusing the Reticle**. It is important that each sniper focus his own sight. The following procedure should be followed:

a. Place the weapon on a steady rest and loosen the eyepiece locking ring one to two turns until the knurled focus ring can be moved.

b. Hold a white card or cloth 8 to 12 cm in front of the objective lens and look through the sight.

c. Rotate the focus ring through the point of focus, and then back and forth, until the reticle is as clearly defined as possible.

d. Throughout focusing, look away from the sight intermittently at a neutral colour (e.g. grass) to relax the eye.

e. Test the focus by looking at an object downrange with the naked eye and then quickly look through the scope. The reticle should be clearly defined and the object may be blurred at this time. If the reticle is not sharply defined repeat the process.

f. Once the reticle is focused, tighten the eyepiece locking ring while ensuring that the focus ring does not move (pencil marks on the focus ring will guarantee this). The sniper should not touch the eyepiece locking ring or the focus ring once the reticle is focused.

49. **Parallax**. If, after focusing the reticle, the target is not in focus, or the target appears to move within the field of view, parallax is present within the sight. Parallax occurs when the objective lens is not focused on the same plane as the reticle.

50. **Testing for Parallax**. Parallax may cause several optical anomalies such as lack of target focus, movement of the target within the field of view, or fading of the reticle when the target is in focus. To determine if parallax is present in a sight:

a. Place the weapon on a steady rest; aimed at a defined object approximately 300 m away.

b. Lie behind the weapon ensuring that no part of the body touches the weapon.

c. Look through the sight. If the target is in focus, move the head back and forth, up and down. The reticle should remain on the object. If the object moves within the field of view as the sniper's head is moved, parallax is present.

51. **Removing Parallax**. It is imperative that parallax be adjusted out of the sight if a proper sight picture is to be achieved. To remove parallax:

a. Place the weapon on a steady rest aimed at a defined target approximately 300 m away, and pencil mark the objective lens lock ring.

b. Lie prone behind the weapon with a sniper partner (No 2) beside the weapon. No 2 loosens the objective lens lock ring no more than one full turn with the sight spanner wrench.

c. Without touching the weapon, look through the sight at the target, and have No 2 turn the objective lens focus ring ¼ turn to either direction and tighten the

objective lens lock ring. It is very important that the objective lens lock ring be tightened after each adjustment to prevent the objective lens from floating (i.e. moving) between the focus ring and the lock ring.

d. Using pencil marks as an alignment guide, repeat this process until the target is in focus and there is no movement between the reticle and the target image. With the scope focused, parallax will not be present.

e. If there is movement of the reticle in the opposite direction of the movement of the sniper's head, No 2 turns the objective lens focus ring clockwise. If there is movement of the reticle in the same direction of the movement of the sniper's head, No 2 turns the objective lens focus ring counter clockwise. Note that this procedure is conducted with No 2 at the objective lens ring end of the scope, facing the sniper.

52. If targets will be engaged at less than 300 m (e.g. in urban operations) the sniper should carry out detailed procedures for adjusting to remove parallax at the minimum range at which targets will be engaged. Parallax is more evident at close range and less apparent at ranges beyond 700 m.

ELEVATION AND WINDAGE ADJUSTMENT

53. Once the sight is zeroed, the sniper estimates the range to the target, determines the windage correction required, and applies these figures to the elevation and windage drums.

54. The main ballistic come ups (for the service match ammunition) are built in to the main elevation adjustment. The elevation scale is graduated from 100 to 800 m in 100 m increments. Targets at 900 m may be engaged by dialing 800 m and aligning the first mil dot below the cross hair on the point of aim. For ranges between the set range settings, set the dial halfway between the range settings (e.g. for 650 m set the dial halfway between 600 and 700 m). There is also an elevation fine tune of +3 MOA to allow for different temperatures, ammunition lots, types of ammunition, and differences in shooter's zeros.

55. The windage drum allows the sniper to apply corrections of 8 MOA left and right as required to compensate for windage deflection.

56. The sight settings for elevation and windage are readable from the rear while firing, and due to the distinctive clicks and the built-in stops on all drums; the sniper can apply elevation and windage adjustments in the dark.

SECTION 3
SIMRAD KN252F

INTRODUCTION

57. The Simrad KN252F Image Intensifier (see Figure 3-9) is a passive night vision device which allows the sniper to effectively engage targets in low light conditions at limited ranges.

This system's greatest advantage is that it is simply an attachment to the Unertl telescope. With the KN252F the sniper affixes it to the mounting bracket and uses the pre-recorded range settings for the Unertl telescope to engage targets to the limit of night visibility. It must be noted that, as with any attachment, accuracy will be affected to a certain degree.

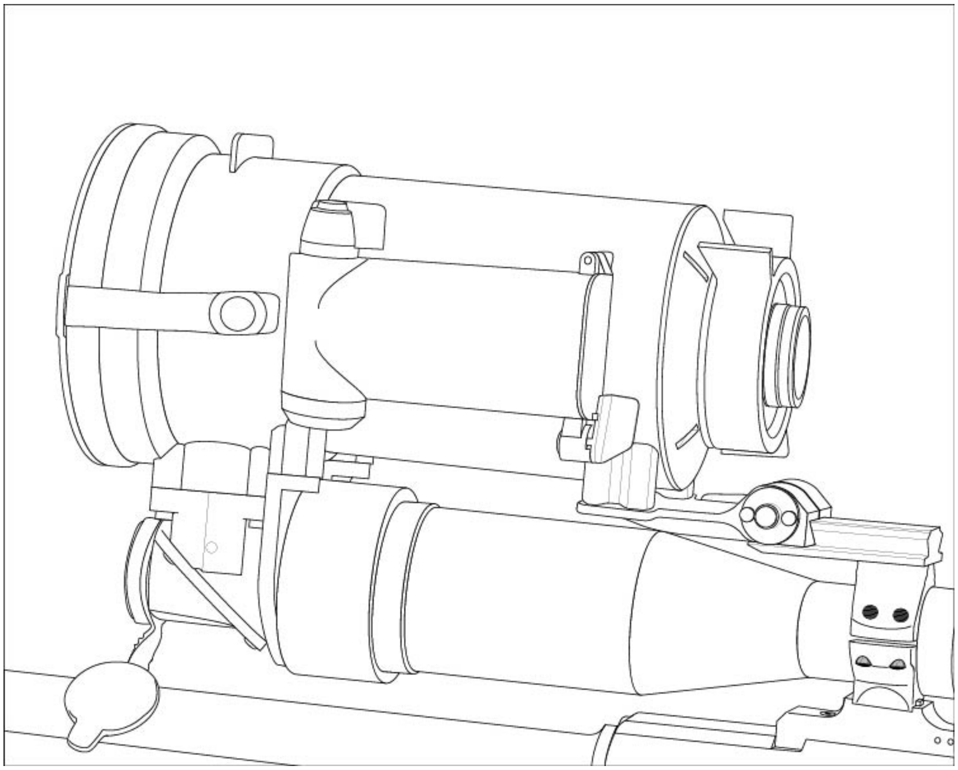


Figure 3-9: Simrad KN 252F Mounted on the Unertl Telescopic Sight

DESCRIPTION

58. The KN252F is a focus adjustable instrument with a magnification of x 1. It is comprised of a main assembly and a beamsplitter assembly, and operates on the same principles as a periscope.

59. **Desiccator**. The desiccator contains a chamber filled with silica gel, which absorbs moisture. The blue humidity indicator turns pink when the silica gel cannot absorb more moisture. When the operator observes pink colour, the unit is returned to stores to have the desiccator replaced. The desiccator has two important functions:

a. it absorbs moisture and keeps the interior of the KN252F dry over a long period of time; and

b. the humidity indicator tells the operator when it is necessary to renew the desiccator.

MOUNTING THE KN252F

60. Once the front, upper telescope mounting ring has been replaced with the Simrad bracket, mounting the KN252F to the weapon is simply a matter of aligning the straylight shield on the Simrad with the objective lens of the Unertl telescope. Ensure the locking lever on the KN252F is rotated to the rear and slide the two components of the dove tail bracket together. Aligning the locking lever with its recess, rotate the lever forward into a positive lock position.

OPERATING PROCEDURES

61. To initiate the operating procedure open the battery lid and insert the batteries, ensuring correct polarity. Turn on the KN252F by operating the ON/OFF switch. Then remove the front lens cover and look into the eyepiece of the telescope. If the KN252F is mounted during daylight conditions, open the window cover in front of the beam-splitter to resume normal operation.

NOTE

Do not remove the front lens cover when operating the KN252F during daylight conditions.

CARE AND MAINTENANCE

62. Sniper maintenance of the KN252F will be restricted to replacing damaged front lens covers and to cleaning and inspection of exterior surfaces, lenses and operating controls which are accessible from the outside. To remove dirt and dust from the housing, a soft clean cloth is all that is required. To remove oil and grease, use a mild detergent and water. The glass surfaces and lenses are cleaned with a lens brush or lens paper. If necessary, the glass surfaces may be cleaned with dehydrated alcohol or isopropanol.

CHARACTERISTICS

63. The following are the general technical specifications of the KN252F:

a. field of view 12º;

b. magnification 1X (+/- 1%);

c. focusing 25 m to infinity;

d. battery 2 x 1.5V alkaline AA cells;

e. battery life approximately 80 hours at 20º C;

f. weight 790 g including batteries; and

g. operational temperature range +52/-40º C.

MONOCULAR NIGHT VISION DEVICE AN-PVS 14

64. The AN/PVS-14 Monocular is a light weight (450 g), battery operated, hand held, headmounted, night vision system which enables walking, driving, short range surveillance, and map reading in both moonlight and starlight. It is equipped to allow for vertical adjustment, fore and aft adjustment, objective lens focus, and eyepiece focus. The monocular is also equipped with an infrared light-emitting source and variable gain control. The monocular may also be connected to the Vector Laser Range Finder (LRF) Binoculars, allowing for night lazing capabilities. Using the AN/PVS-14/Vector LRF Binoculars in conjunction with the PAC 4 Laser Pointer, increased lazing ranges are possible

DESCRIPTION AND LOCATION OF COMPONENTS

65. The Monocular AN/PVS-14 includes the items shown in Figure 3-10.

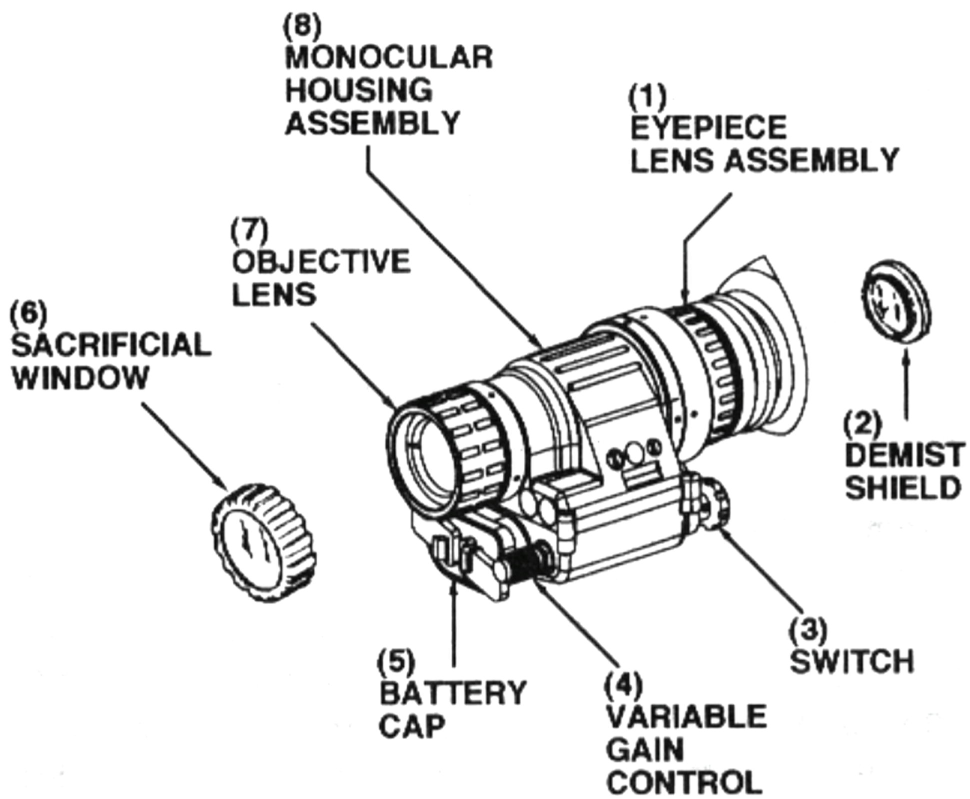


Figure 3-10: Monocular AN/PVS-14

66. The monocular and accessories are shown in Figure 3-11.

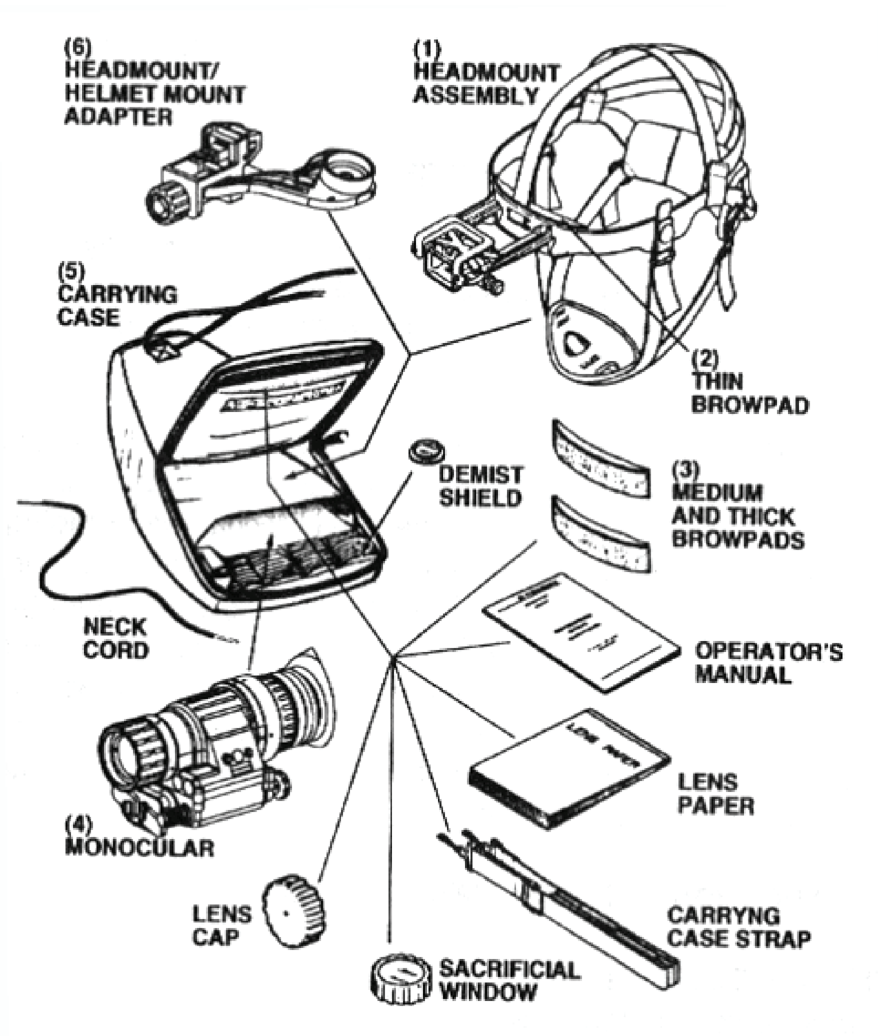


Figure 3-11: Monocular AN/PVS–14 and Accessory Items

SECTION 4
AMMUNITION

NORMA MATCH AMMUNITION

67. To ensure consistent accuracy with the sniper rifle the sniper must use Match grade ammunition. Norma match ball is the only current match issue ammunition.

68. This round was selected for sniping because it is manufactured to a higher standard of quality and is more consistent than normal service ammunition. The component information for this round is as follows:

a. caliber 7.62 mm;

b. muzzle velocity 2,680 fps;

c. bullet weight 9.33 g; and

d. case length 51 mm.

69. In the event of an emergency, the sniper may fire normal 7.62 mm service ammunition, but it must be accepted that accuracy will suffer. Since the consistency standards of the service ammunition are less stringent, the trajectory of service ammunition will vary slightly from round to round, and will result in an increase in grouping size at all ranges.

AMMUNITION HANDLING

70. Since all ballistic calculations are factored using clean dry ammunition, any variance in ammunition condition will result in an accuracy loss. Hot, dirty, wet or oily ammunition will result in increased chamber pressure, which will cause an irregular trajectory that is impossible to determine for individual shots. Damaged rounds may cause stoppages or affect the trajectory of the projectile by altering the balance of the projectile in flight. Rounds must be cleaned and inspected before being loaded into the magazine. Care must be taken with the method of carrying ammunition and magazines to protect them from dampness, dirt and rough handling.

SECTION 5
OBSERVATION AIDS

TYPES

71. In addition to the naked eye, the sniper has two main observation aids: binoculars and spotting telescope. Both these devices have advantages and limitations, and the sniper must be totally familiar with them.

M22 BINOCULARS

72. **Description**. The M22 Service binoculars incorporate an interocular adjustment (adjustment for the space between the eyes) and a diopter adjustment on each eyepiece for focusing the binoculars to each eye. A reticle pattern is used for angular measurement and judging distance. The horizontal scale is graduated in 5 mil intervals from 0 to 50 mils each side of centre. The vertical scale is graduated in 5 mil intervals with 70 mils above the horizontal and 30 mils below. Present service binoculars have a magnification of seven with a field of view of approximately 130 mils (7 x 130).

73. **Laser Protection Filters**. The M22 binocular is provided with laser protection filters as indicated by the label located around the spindle. The laser protective coating is contained on the surfaces of the lens located behind the objective lens.

CAUTION

Under most light conditions this protective coating reflects an abnormal amount of light back into the target area.

74. **Preparing for Use**. To adjust the binoculars for use the user must:

a. Spread the telescopes completely and bring them slowly together while looking through the binoculars. When the field of view becomes one circle, the adjustment is correct. The reading on the interocular scale should be noted in order that the binoculars can always be pre-set to the correct reading.

b. Look at a distant object and close one eye. By adjusting the focusing ring on the active eyepiece, bring the object into sharp focus. Repeat the procedure for the other eye and note the diopter readings. To ensure that the scales do not move they should be taped in position.

NOTE

The spotting telescope should not be used for scanning unless it is the only optical instrument available.

c. Adjust the length of the neck strap so that the binoculars rest high on the chest but can still be brought up to the eyes for use. If the binoculars are too low they will cause discomfort while crawling.

SPOTTING TELESCOPE

75. **Description**. The spotting telescope is a Leupold containing a Mil-dot reticle pattern very similar to the telescopic rifle sight. It has a variable magnification of 12–40 X and a maximum field of view of 60 mil. It is issued with an adjustable stand and a web carrying case. To aid in camouflage the telescope can be used while inside the web carrying case. To protect the lenses a lens cap screws over each end of the telescope.

76. **Adjustment**. To focus the telescope, it should be aimed at a distant object and the knurled knob rotated until the object is seen clearly and sharply.

77. **Using the Spotting Telescope**. The narrow field of view of the spotting telescope makes its use for scanning extremely limited. Its main use is to examine in detail targets or suspicious areas noticed when observing with the naked eye or binoculars. It is also used for observing fire at a target in order that corrections may be given.

78. **Care of the Spotting Telescope**. To properly maintain and care for the spotting telescope the user must:

a. Always leave the lens caps in place until the telescope is to be used.

NOTE
Only an optical technician may remove the lenses of the spotting telescope.

b. Always leave the telescope in its carrying case for protection.

c. Protect the telescope from direct blows to prevent damage to the mechanism or the lenses.

d. Protect the telescope from excessive moisture. Moisture that seeps inside the telescope will cause the lenses to fog.

e. Ensure that the nuts holding the legs to the mount are kept snug.

f. When wiping the lenses always use lens paper. In an emergency a clean, soft, dry piece of flannel may be used.

SECTION 6
OTHER ENABLING EQUIPMENT

GENERAL

79. Due to the isolation of operational sniper teams and the absolute necessity for self-reliant action, snipers must be permitted a great deal of leeway when determining what is mission essential equipment and what is not. Any equipment, issued or not, if deemed effective should be pressed into service to successfully complete the sniper mission.

ALTERNATE WEAPONS

80. The sniper team should never be restricted to the use of specific weapons. Different types and scales of operations require flexibility when determining which weapons will be most effective.

81. **C7 with Grenade Launcher**. The C7 with grenade launcher provides the sniper team with additional observation ability (C79 scope), automatic small arms fire, and the destructive capability of the 40 mm grenade launcher.

82. **C8 Carbine**. The reduced size and weight of the C8 Carbine make it a favourite with many sniper teams. Its automatic small arms fire gives the sniper team a lightweight close protection weapon.

83. **C9 LMG**. In some operational environments the team may feel that the additional fire power of the C9 LMG with its optical sight is necessary.

84. **Combat Shotguns**. With their incredible stopping power and limited penetration ability, the shotgun may be the preferred weapon for defending building hides during internal security or urban operations.

85. **Sidearms**. The sniper must have a back up weapon. The 9 mm pistol carried either in a belt, leg or shoulder holster will provide the sniper close range protection while operating in the confines of a sniper hide or when the carriage of another rifle is not practical such as stalking missions. Sidearms also permit the sniper to remain armed during routine activity while not telegraphing his speciality to any casual or trained observer.

NIGHT VISION GOGGLES

86. Night vision goggles are an invaluable observation device for night operations. Virtually all movement into or out of hides or positions will be conducted under the cover of darkness. Goggles provide the team with passive or active night vision capabilities.

NOTE

The use of laser detectors may compromise the sniper's location. The lasing of targets should therefore be conducted sparingly.

LASER RANGE FINDERS

87. The Leica Vector LRF binocular is a Class 1 eye safe laser capable of accurately determining range from 25–4000 m in 1 m increments. It has a magnification of x 7 with a field of view of 120 m at 1000 m. The Vector LRF weighs 1.7 kg and is powered by a 6V lithium battery. Besides having the capabilities of being a range finder and binoculars, it can also measure vertical angles and act as a digital compass indicating bearing, horizontal direction, and the angle between North and an object. The Vector LRF can also be attached to the Global Positioning System (GPS), and/or the AN/PVS-14 Monocular.

GLOBAL POSITIONING SYSTEM

88. The PLGR+96 is a hand held battery or external powered navigation set that computes accurate position co-ordinates, elevation, speed, and time information from signals transmitted by GPS satellites. The PLGR is a valuable tool for the sniper team as an aid to navigation. It is also used to determine exact elevation and range for accurate shooting and calling indirect fire. For isolated snipers, battery life is the determining factor for when and if the PLGR is used.

COMMUNICATIONS

89. In addition to current in service radios, snipers may require an intimate, close range, hands free communications system that permits the team to pass information back and forth

during tactical movement (stalking). While not currently available through the military supply system, "whisper mikes" are readily available commercially. The acquisition and use of such systems in the sniper section is encouraged.

HAND HELD ANEMOMETERS

90. The effects of wind on the bullet pose the greatest problem for the sniper. During hours of daylight, observation of surrounding terrain will give the sniper enough information to estimate wind speed and apply corrections to the scope. During hours of reduced visibility or darkness the sniper's ability to observe wind effects is limited to use of night vision devices. These reduced observations cannot supply enough data to accurately determine wind speed. Hand held anemometers give the sniper an accurate method of determining wind speed at the firing position. With this reading and knowledge of wind patterns the sniper can increase the probability of a first round hit.

91. **Chronograph**. A chronograph is used to obtain the muzzle velocity of any type of ammunition fired out of any weapon. With this information the sniper will improve his ability to hit the target at longer ranges.

SECTION 7
THE LEUPOLD TELESCOPIC SIGHT

INTRODUCTION

92. The Leupold Mark IV telescopic sight is a rugged and durable sight. Once its system of applying elevation and windage data is understood, its effectiveness can be clearly appreciated. When firing at long ranges, many factors greatly affect the trajectory of the round. As a result, the use of a telescopic sight using a bullet drop compensator, like the C3A1 scope, becomes impractical.

DESCRIPTION

93. **General**. The Leupold scope was engineered to function reliably under the most severe conditions. It is waterproof, shockproof, and oblivious to sudden weather or pressure changes. The scope tube is machined from aircraft aluminum alloy for maximum strength and durability.

94. **Light Gathering Capability**. All lens surfaces are multicoated for optimum light transmission in poor light conditions.

95. **Reticle**. The Leupold telescopic sight uses the same reticle pattern as the C3A1 scope.

96. **Windage Drum**. The windage can be adjusted approximately 20 MOA left and right in ¼ increments. Turning the drum counter clockwise will cause the mean point of impact (MPI) to move to the Right. A minute of angle (MOA) is equivalent to 29 mm or 1.14 inches at 100 m.

97. **Elevation Drum**. The elevation can be adjusted approximately 145 MOA in ¼ increments. One complete turn of the elevation drum is 15 MOA.

98. **Parallax Drum**. The parallax drum is located on the left side of the scope.

CHARACTERISTICS

99. The Leupold telescopic sight characteristics are as follows:

a. weight 625 g;

b. length 39 cm;

c. objective lens diameter 40 mm;

d. optimum eye relief 10 cm; and

e. magnification 16X.

FOCUSING THE TELESCOPIC SIGHT

100. Prior to zeroing the Leupold Mark 4 M1 optic, it is important that the optic is in focus for the firer, since this will alleviate the requirement to re-zero due to an out of focus optic. The following is the procedure for focusing the optic to the firer:

a. **Step 1**. Grasp the eyepiece and back it away from the lockring. Do not attempt to loosen the lockring first; it will automatically be loose when you back away the eyepiece (no tools are needed).

b. **Step 2**. Decide whether to screw out the eyepiece or to screw in the eyepiece. Make your decision based upon this logic: If you tend to hold things away from yourself in order to see them clearer (or did before you wore glasses), unscrew the eyepiece. If you tend to hold things closer to your eyes in order to see them clearer (or did before you wore glasses), screw in the eyepiece.

c. **Step 3**. Turn the eyepiece several turns so as to move at least 3.5 mm. It will take this much change to achieve any measurable effect on the focus.

d. **Step 4**. Look through the scope at the sky or a blank wall, and check to see if the reticle appears sharp and crisp.

e. **Step 5**. Repeat steps 3 and 4 until focus is achieved. Then lock up the eyepiece by screwing.

REMOVING PARALLAX

101. To remove parallax from the scope, simply adjust the parallax knob until the target is in focus.

WINDAGE ADJUSTMENT

102. Once the sight has been zeroed, the sniper determines the windage and spin drift correction, and applies it on the windage drum.

ELEVATION ADJUSTMENT

103. On the elevation drum, each vertical line represents ¼ MOA. One complete rotation equals 15 MOA. Horizontal lines on the drum denote these. When the elevation is set exactly on a 15 MOA increment, the horizontal line can be seen. When the drum is not set exactly on a 15 MOA increment, the elevation setting can be read by adding the last visible horizontal 15 MOA increment to the appropriate vertical increment. Turning the elevation drum counter-clockwise will cause the MPI to go higher. Once the sight has been zeroed the sniper must determine the elevation sight setting to be used by taking into consideration the factors affecting trajectory (Chapter 3), and apply the appropriate elevation setting to the scope.

CHAPTER 4
SNIPER MARKSMANSHIP

SECTION 1
GENERAL

INTRODUCTION

1. The sniper must be a near perfect shot. He must have the intelligence and experience to take all factors into consideration before he sets his sights and fires the one and only shot he is likely to have at his target. All other sniper training is wasted if the sniper misses his target. If the target is missed, the mission is a failure.

2. Many of the essentials of good shooting are applied naturally, without conscious thought, by good shots. Others become good shots through concentration and much practice perfecting essential skills. What is clear is that all good shooters do apply all these skills to their shooting.

3. Sniper marksmanship is an extension of basic rifle marksmanship and focuses on the techniques needed to engage targets at extended ranges.

4. To successfully engage targets at increased distances, the sniper must be thoroughly proficient in marksmanship skills and advanced shooting techniques, such as determining the effects of weather conditions on ballistics, holding off for elevation, windage, engaging moving targets, and the use of optical sights, to include adjusting and zeroing. These combined skills form the foundation of sniper marksmanship but are perishable skills which must be practiced often.

METHOD OF TRAINING

5. Sniper marksmanship training is carried out in two stages, i.e. conventional ranges and field firing. Conventional range practices bring the student up to the required standard under controlled conditions. Once the standard is reached, the sniper is ready for field firing, and it is here that success is essential because this type of firing approximates real operations. Training must be continued on a regular basis once the formal course has finished. One day per week of marksmanship continuation training, ideally consisting of a dawn morning period and an afternoon dusk period on separate days, is considered to be the minimum

SECTION 2
FUNDAMENTALS OF SNIPER MARKSMANSHIP

GENERAL

6. A sniper must be thoroughly trained in the advanced techniques of sniper marksmanship. These include adopting a fire position, sighting and aiming, breathing control, trigger control, shot release and follow through. These fundamentals develop fixed and correct shooting habits

for instinctive application. Every sniper, regardless of experience, should remain current with the fundamentals.

ADOPTING A FIRING POSITION

7. The sniper should fire from the prone supported position. Only when a prone supported position cannot be used will the sniper use an alternate position. In any type of fire position, the sniper should use artificial support for the weapon. This can be rucksacks, logs, sandbags, or anything else that provides a stable platform for the rifle (see Figure 4-1). This reduces movement of the weapon caused by contact with the body. First shot accuracy is an absolute must for the sniper's mission. The five elements common to a good fire position are:

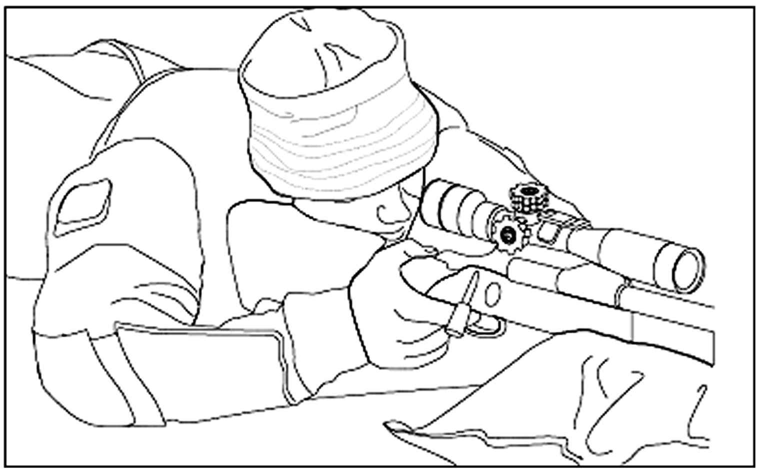


Figure 4-1: Stable Firing Position

a. **Non-firing Hand**. Use the non-firing hand to support the butt of the weapon and ensure a firm contact between butt and shoulder. The sniper places his hand next to his chest and rests the tip of the butt on it. He balls his hand into a fist to raise the weapon's butt, or loosens the fist to lower the weapon's butt. A preferred method to do this is to hold a sock full of sand in the non-firing hand and place the butt on the sock. This reduces body contact with the weapon. To raise the butt the sniper squeezes the sock, and to lower the butt he loosens his grip on the sock.

b. **Butt of the Stock**. Place the butt of the stock firmly into the pocket of the shoulder. The sniper can insert a pad on the ghillie suit where contact with the butt is made. This reduces the effects of pulse and breathing that may be transmitted to the weapon through the shoulder butt contact.

c. **Firing Hand**. With the firing hand, grip the small of the stock. Using the middle through little fingers, exert a slight rearward pressure to keep the butt firmly in contact with the pocket of the shoulder. Place the index finger on the trigger, ensuring that it does not touch the stock of the weapon and will not disturb the lay of the weapon when the trigger is squeezed.

d. **Elbows**. Find a comfortable position that provides maximum support, ensuring that the elbows will not slide during firing.

e. **Stock Weld**. The sniper must fit the weapon to himself and fire a series of shots to confirm the fit prior to zeroing. Once zeroed, the sniper must place his cheek against the butt in the exact same place for each subsequent shot. Any change to the stock weld will change eye relief, causing a change to the sight picture which results in misplaced shots. Often marking the cheek piece in some way will assist in maintaining stock weld.

SIGHTING AND AIMING

8. **General**. The arrangement of an optical sight allows the sniper to see all aspects of the aim picture in the same focus plane. The front sight in a telescopic sight is replaced by the reticle and the sight body replaces the rear sight. The objective and eyepiece lens focus the target and the reticle to the sniper's eye on one focus plane.

9. **Use of the telescopic sight permits**:

a. rapid aiming, because the sniper's eye sees the reticle and the target with equal clarity at the same time;

b. extreme accuracy in aiming, which enables the sniper to fire at distant, barely perceptible, and camouflaged targets which are not visible to the naked eye; and

c. accuracy of fire under conditions of unfavorable illumination, such as dawn and dusk, and during periods of limited visibility (moonlight, fog, etc.).

10. **Eye Relief**. The proper distance between the rear of the sight and the eye is about 75 mm. Eye relief must be confirmed prior to focusing or checking for parallax. It is essential that all the reticle be seen. The sniper must experiment to find the proper relief by moving the telescope back and forth on the mounts, and making appropriate adjustments to the sling and the butt length.

11. **Aiming the Rifle**. Aiming involves three components: eye relief, sight alignment, and sight picture. Begin the aiming process by aligning the rifle with the target when assuming a firing position. The rifle should point naturally at the desired point. No muscular tension or movement should be necessary to hold the sights on target. To check the natural point of aim, the sniper assumes a comfortable, stable firing position. He then places his cheek on the stock at the correct stock weld, enters into the natural respiratory pause, looks away from the scope by moving only his eye, relaxes and lets the rifle drift to its natural point of aim, and then looks back into the scope. If the reticle is in the correct location on the target, the natural point of aim is correct. If it is not correct, the sniper must change body position (by shifting the hips and not the elbows) to bring the sights onto the point of aim on the target. If muscles are used to adjust the weapon onto the point of aim, the muscles will automatically relax as the rifle fires, and the rifle will begin to move toward its natural point of aim. Since this movement begins just before the weapon discharges, the rifle is moving as the bullet leaves the muzzle. This causes displaced

shots with no apparent cause (recoil disguises the movement). By adjusting the weapon and body as a single unit, rechecking, and readjusting as necessary, the sniper achieves a true natural point of aim. Once the position is established the sniper will then aim the weapon at the exact point on the target.

12. **Quartering the Target**. The sniper sees the cross hairs and the image (target) at the same time. Both cross hairs and target have the same degree of clarity. He positions his head so that he has a full field of view with no shadows, places the cross hairs on the target, and quarters the target.

13. **Sight Picture**. With telescopic sights, the sight picture is the relationship between the reticle and full field of view, and the target, as seen by the sniper. The sniper centres the reticle in a full field of view. He then places the reticle centred on the largest visible mass of the target (as in iron sights), and concentrates on the reticle not the target. The centre of mass of the target is easiest for the sniper to locate, and it surrounds the intended point of impact with a maximum amount of target area in case of an error in the aiming process.

AIMING PROCESS ERROR

14. Everyone occasionally makes an error in the aiming process. When alignment and picture are perfect (regardless of sighting system), and when everything else is done correctly, the shot will hit centre of mass on the target. However, with an error in sight alignment the bullet is displaced. Some common errors are described in the following paragraphs.

15. **Shadow Effects**. During aiming, the sniper must ensure there are no shadows in the field of view of the telescope. The field of view must be completely clear. If the sniper has incorrect eye relief, a circular shadow will be seen in the field of view, reducing the field size and hindering observation. If crescent shaped shadows are present, the bullets will strike to the side away from the shadow.

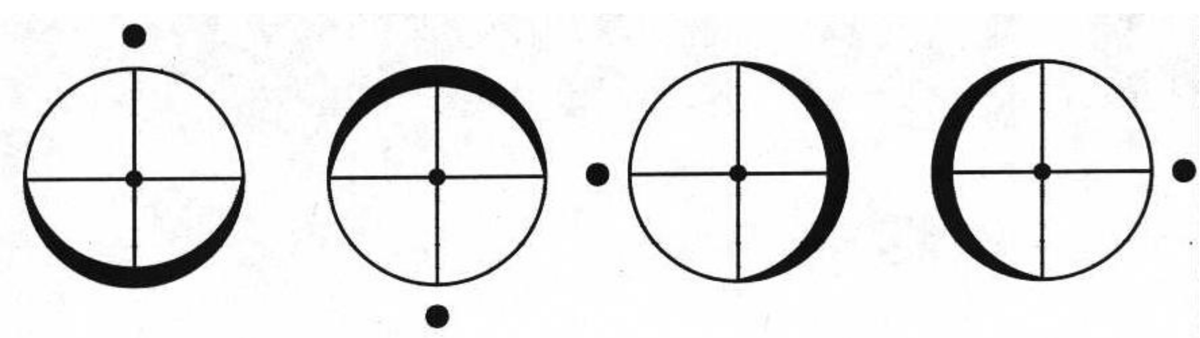


Figure 4-2: Effects of Scope Shadow on Fall of Shot

16. **Head Adjustment**. If the sniper notices shadow on the edges of the field of view during aiming, he must find a position for his head in which his eye will clearly see the entire field of view of the telescope.

17. **Canting**. Canting is the act of tipping the rifle to either side of the vertical. If the horizontal cross hair is canted, the strike of the bullet will hit in the direction of the cant. The more the cant or greater the range, the further off the target the strike will be.

18. **Sight Picture Error**. An error in sight picture is an error in the placement of the cross hair. Such an error causes no displacement between the line of sight and the axis of barrel. The weapon is simply pointed at the wrong spot on the target. Since no displacement exists as range increases, close and far targets are hit or missed depending on where the reticle is when the rifle fires.

19. **Exercising Breath Control**. Breath control is important with respect to the aiming process. If the shooter breathes while trying to aim, the rise and fall of his chest causes the rifle to move. He must, therefore accomplish correct sight picture during breathing and complete the aiming process while holding his breath. To do this, he first inhales, then exhales normally and stops at the moment of natural respiratory pause:

a. A respiratory cycle lasts 4 to 5 seconds. Inhalation and exhalation require only about 2 seconds. Thus, between each respiratory cycle there is a pause of 2 to 3 seconds. This pause can be extended to 6 seconds without any special effort or unpleasant sensations. The shooter should fire during this pause when his breathing muscles relax. This avoids strain on his diaphragm.

b. A sniper should assume his firing position and breathe naturally until his hold begins to settle. Many shooters take a slightly deeper breath, exhale, and pause, expecting to fire the shot during the pause. If the hold does not settle sufficiently to allow the shot to be fired, the shooter resumes normal breathing and repeats the process.

c. The respiratory pause should never feel unnatural. If it is too long, the body suffers from oxygen deficiency and sends out signals to resume breathing. These signals produce involuntary movements in the diaphragm and interfere with the shooter's ability to concentrate. Generally speaking, 6 seconds is the maximum safe period for the respiratory pause. During multiple, rapid engagements, the breathing cycle should be forced through a rapid, shallow cycle between shots instead of trying to hold the breath or breathing. Firing should be accomplished at the forced respiratory pause.

TRIGGER CONTROL

20. **Exercising Trigger Control**. Causing the rifle to fire when the sight picture is at its very best, without causing the rifle to move, is called exercising trigger control. Trigger squeeze, on the other hand, is defined as the independent action of the forefinger on the trigger, with uniformly increasing pressure straight to the rear until the rifle fires. Trigger control is the last task accomplished before the weapon fires. It is more difficult to apply when using a telescope or when occupying an unstable firing position:

a. Proper trigger control occurs when the sniper engages the trigger with that part of his firing finger that allows him to squeeze the trigger straight to the rear. He fires the weapon when the reticle is in a position to ensure a well placed shot.

b. Trigger control is best achieved by assuming a stable position, adjusting on the target, and beginning a breathing cycle. As the sniper exhales the final breath toward a natural respiratory pause, the reticle settles at the desired point of aim, and he applies initial pressure. He increases the tension on the trigger during the respiratory pause as long as the reticle remains on the point of aim. If the reticle moves away from the desired point of aim, and the pause is free of strain or tension, the sniper stops increasing the tension on the trigger, waits for the reticle to return to the desired point, and then continues to squeeze the trigger. This is trigger control. If movement is too large for recovery or if the pause has become uncomfortable (extended too long), the sniper should, whenever possible, carefully release the pressure on the trigger and begin the respiratory cycle again.

SHOT RELEASE AND FOLLOW THROUGH

21. Shot release and follow through is the act of continuing to apply all sniper marksmanship fundamentals as the weapon fires as well as immediately after it fires. Follow through consists of:

a. keeping the head in firm contact with the stock weld;

b. keeping the finger on the trigger all the way to the rear;

c. maintaining the sight picture;

d. ensuring that muscles stay relaxed;

e. avoiding reacting to recoil and or noise; and

f. releasing the trigger only after the recoil has stopped.

22. Common faults during shot release and follow through are as follows:

a. **Anticipates Recoil**. The firing shoulder begins to move forward, the body tenses, and the eyes are often closed just before the round fires.

b. **Jerks the Trigger**. The trigger finger moves the trigger in a quick, choppy attempt to fire before the reticle can move away from the desired point of aim.

c. **Flinches**. The sniper overreacts to anticipated noise or recoil (usually due to being unfamiliar with the weapon).

COLD BORE SHOT

23. Once the sniper has been taught the fundamentals, the primary concern becomes ensuring quality shooting, i.e. the sniper's ability to apply this knowledge during a mission. A very effective way to do this is to teach the sniper team the integrated act of firing one round. Firing one round involves preparation of equipment, selection of a firing position, detection of a target, and sight adjustments needed to engage the target. The act of predicting where the first bullet fired from a cold rifle will travel presents a difficult challenge to the sniper as each rifle acts differently. Snipers must be religious in the recording of results fired from a cold bore, including as many details as possible including the cleanliness of the barrel prior to the shot. Sniper trainers should strive to practice this skill at the commencement of each range day:

a. Before leaving the preparation area, the sniper ensures his weapon system and equipment are in working condition. The weapon should be properly camouflaged, zeroed with the ammunition to be used on the mission, and have a clean and dry bore. The observer will inspect the binoculars and telescope to ensure that optics are clean and that they will not fog up on the mission.

b. The sniper team carefully selects a firing position, ensuring it has enough room for the sniper and observer to acquire good firing and observing positions with clear fields of fire. The sniper should be in a prone supported position that allows fire in any direction within the target area. Once in position, the sniper team conducts a search of the area while preparing a range card to use for quick range referencing.

c. Upon detection of a target, the team determines the distance to the target, and the sniper makes the needed elevation adjustment. The observer determines wind direction and velocity, and tells the sniper the needed windage adjustment. Using good marksmanship fundamentals, the sniper fires one round. The observer watches the target and swirl or strike to determine the exact placement of the round, and prepares to give corrections to the sniper if necessary.

SNIPER—OBSERVER DIALOGUE

24. Once in the firing position or hide, the sniper and observer each have responsibilities for ensuring that the target is accurately engaged with one well aimed shot. The basis for fulfilling their roles is communication, i.e. the exchange of data and information:

a. **Observer**. It is the observer's responsibility to enable the sniper to locate and accurately engage a target with a single well aimed shot. The specific functions that the observer must perform, but is not limited to, are the following:

(1) target location and description;

(2) reading the mirage;

(3) field sketching and range card construction;

(4) determining range and calling for shots; and

(5) observation log.

b. **Sniper**. The sniper receives the target indication with range, and windage or hold, from the observer. Once he has this information, the sniper is responsible for firing the shot. He concentrates only on the cross hairs in his scope and applies marksmanship fundamentals. The sniper informs the observer when he is ready to fire, but will not fire until the observer gives him the “Go”.

c. **Basic Terms**. The sniper team may communicate in any way they feel comfortable with, as long as it is effective and concise. Some examples of proven methods include:

(1) **Hold**. Aiming point in relation to target.

(2) **Lead**. Aiming point in relation to moving target.

(3) **Ready**. Ready to fire.

(4) **Go**. Fire when ready.

(5) **Stop**. Do not fire, hold position.

(6) **Standby**. Observe target, about to fire.

d. **Example**. The following is an example and description of effective sniper observer dialogue used when communicating in a fire position or hide:

(1) **Observer**. While the sniper is preparing for the shot, the observer annotates the data book, observing wind direction and velocity, and consulting the wind chart. When the sniper announces **READY**, the observer looks through the spotting scope and reads the mirage. He then mentally formulates his wind call and gives the sniper a hold or correction and hold. For example, the observer indicates **HOLD CENTRE CHEST** or **ADD ONE MINUTE LEFT WINDAGE, HOLD CENTRE HEAD**.

(a) In some cases, such as shooting against a wind that is switching direction back and forth or “fish tailing”, a constant condition may only present itself for a few seconds. In this instance a hold off may be used. If the wind is moving left to right, the observer would then tell the sniper to **HOLD LEFT LUNG**.

(b) If the conditions change again, the observer would simply give another hold. Each time, the sniper changes the placement of the cross hairs to the new hold and re-establishes his concentration.

(c) When the observer sees that the conditions are right, he then gives the sniper permission to fire by saying **GO**.

(2) **Sniper**. At this time the sniper controls his breathing and begins applying trigger control, concentrating on the cross hairs until the trigger breaks. The sniper will not fire until he has the "Go".

(3) **Observer**. If the conditions change during the time the sniper is applying rearward pressure on the trigger, the observer attempts to correct the hold to compensate for the change in condition. The observer does this by saying **HOLD LEFT LUNG**. As soon as the sniper hears the observer say **HOLD**, he ceases applying rearward pressure on the trigger, and as he hears **LEFT LUNG** he adopts the new hold and waits for the "Go" to continue the rearward pressure needed to break the trigger.

(4) **Sniper**. Once the trigger breaks and follow through has been completed, the bolt is cycled. While bolt operation is taking place, the sniper calls his shot, **LEFT LUNG**.

(5) **Observer**. After observing the swirl produced by the round on its way to the target, the observer annotates the call and the shot in the pocket book and the dialogue begins again.

(6) The entire dialogue takes 5 to 7 seconds from the time the sniper announces he is ready until the trigger breaks.

MARKSMANSHIP FUNDAMENTALS FOR THE LRSW

25. When introducing snipers to the Long Range Sniper Weapon (LRSW) there are some considerations that must be taken into account. The amount of ammunition that the sniper will fire will be much less than that for MRSW training. The physical effects of recoil, noise and muzzle blast are greater than that for the MRSW, and could create negative results during the sniper's training. With the observer not being directly behind the weapon, the effects are even greater on him:

a. **Recoil**. The stronger recoil of the large caliber round creates physical wear upon the sniper. It is essential that the rifle be properly fitted to the firer to reduce these effects.

b. **Muzzle Blast**. As a round is fired, the air in front of, and the gas behind, the bullet gets dispersed through the muzzle break. Exposure to this muzzle blast combined with the heavy recoil of the weapon can cause an inexperienced sniper to be intimidated by the weapon. One technique to consider is to place sandbags on both sides of the weapon to reduce the blast. Once the sniper has gained confidence in his LRSW marksmanship the sandbags can be removed.

c. **Marksmanship Principles**. It is essential that the sniper does not disturb the lay of the rifle while it is fired. Any minor mistakes in the following marksmanship principles will cause great errors at long range.

d. **Position and Hold**. The sniper should lay behind the rifle in a manner that causes the weapon to recoil straight back. The sniper is positioned so that the length of his body is in line with the axis of the bore. The axis of the barrel should go through the right shoulder, buttocks, and leg for a right handed shooter. If the sniper lies on an angle so that only the shoulder receives the recoil, the weapon may be pulled off line.

e. **Natural Alignment**. Air and gas dispersed through the muzzle break during the firing of a round causes some force to pull in the opposite direction to the recoil. The sniper must ensure that the weapon is naturally aligned on the target. If not, this force will cause the weapon to be pulled off target.

f. **Shot Release and Follow Through**. As discussed earlier, the lay of the rifle must not be disturbed. Tensing up as the shot is fired, or attempting to get the sight back on the target too quickly, will pull the weapon off the target. The weapon must be allowed to go through its process without unnecessary influence.

SECTION 3
FITTING THE RIFLE TO THE FIRER

INTRODUCTION

26. There are several adjustments that must be made both to the rifle itself and to the associated equipment before the sniper can achieve a "naturally good" fire position.

FITTING THE RIFLE TO THE FIRER

27. Before commencing this sequence the firer must be dressed in the jacket he will use in operations or a similar jacket that will allow for the same results:

a. **Adjustment of Butt Length**. Butt length is the distance between the butt and the trigger. On the C3A1 this may be adjusted 300–348 mm by the addition or removal of butt shims. The rifle is issued with four shims, and the firer removes them as required. The butt length is correct when, with the butt into the shoulder and the firing hand in contact with the comb of the butt and the trigger, the elbow of the firing arm rests naturally in position to provide maximum support without straining the arm. This length is determined for the prone bipod position as this is the primary sniper firing position.

b. **Hand Stop Position**. The nylon hand stop is used when firing in the Hawkins (see paragraph 33) or one point sling position. It is correct when the hand stop rests in the web of the non-firing hand with the arm at a relaxed full extension,

elbow locked, and the fingers turned off to align the web with the axis of the bones of the forearm. It may be adjusted forward or rearward by the removal of the lock knob on the base of the hand stop. The hand stop is only to be adjusted when butt length and eye relief are correct.

c. **Sling**. This should be adjusted so that it gives maximum support to all fire positions, but must be marked by the individual for correct use in each position.

d. **Eye Relief**. Adjustment for eye relief is completed in conjunction with, and helps to determine, correct butt length.

e. **Stock Weld**. To aid in eye relief, the sniper may have to adjust and mark the adjustable cheek piece. While in the prone position the firer turns the knurled knob counter-clockwise and raises or lowers the cheek piece into the correct position. Once the cheek piece is in the correct position the firer will secure the knurled knob by turning it clockwise.

f. **Bipod**. Depending on the sniper's build, when shooting with the bipod he may have to extend the legs to be in a more comfortable position.

28. It must be realized that all items in the above sequence interact to a great extent. Experimentation by the sniper is necessary to arrive at the adjustments that are best for him. All the above procedures must be confirmed to ensure that the sight and rifle are fitted to the sniper, and that he is comfortable and confident with his weapon prior to any firing.

SECTION 4
FIRING POSITIONS

GENERAL

29. A correct firing position is essential to sniping. The more solid the position, the easier it is to hold the rifle and control the trigger without disturbing the sight picture. There are five basic firing positions used in sniper training: prone, sitting, kneeling, standing and Hawkins. These positions are flexible to allow modifications according to individual body structure. On the battlefield a sniper must assume the steadiest position possible which allows observation of the target area and provides cover and concealment. Depending on the terrain, vegetation, and tactical situation, there are numerous possibilities, however in most instances there will be variations of the five basic positions. The sniper must apply the fundamentals of relaxation and maximum support for his rifle. He should be permitted to adjust the position to best fit his own body structure.

CHARACTERISTICS OF A GOOD FIRE POSITION

30. Regardless of the fire position used, there are certain aspects of all good firing positions, which remain the same. These characteristics are as follows:

a. **Support**. The position must provide adequate support to maintain the aim throughout the firing sequence. This support is achieved by either natural or prepared rifle rests. The rest eliminates the transmission of muscular tension to the rifle.

b. **Observation**. The fire position must provide a clear view of the target area to be engaged. The sniper must be capable of observing, identifying, prioritizing and engaging targets within the target area.

c. **Protection**. The sniper, when choosing the fire position, must consider the consequences of detection by the enemy. The position should provide protection from small arms fire and allow for a concealed withdrawal under fire.

d. **Concealment**. The position should be chosen carefully to allow maximum application of fieldcraft skills during the firing sequence.

e. **Depth**. The use of vegetation between the position and the enemy provides the illusion of depth. This depth aids the sniper in concealment and protection from view and can even protect the sniper from enemy fire. The sniper must determine the point where the vegetation provides maximum depth without interfering with the sight picture or trajectory of the round.

PRONE POSITIONS

31. **One Point Sling**. When firing using the one point sling, the sling is adjusted to the firer's non-firing arm length. The sling is correct when the elbow of the non-firing hand is in the most stable and comfortable position, and there is no slack in any part of the sling. To adjust the position of the elbow rearward, forward or laterally, tighten or loosen the sling buckles as required. It is important that the sling be worn and clamped as high as possible on the upper non-firing arm.

32. **Bipod**. When firing using the bipod (see Figure 4-3) the sniper's non-firing hand is used to stabilize the position as much as possible, either as a fist under the butt or with the web of the hand forced back against the rear sling swivel.



Figure 4-3: Prone Bipod Position

33. **Hawkins Position**. When firing from a very low bank or a fold in the ground, great steadiness and excellent concealment may be obtained using the Hawkins position (see Figure 4-4). The sling is not used and the non-firing hand is positioned against the hand stop. The non-firing arm is straight and the forearm should, if possible, also be in contact with the forestock. The butt of the rifle is on the ground under the armpit. To control recoil the non-firing hand must maintain a forward pressure; the non-firing arm should be locked so that recoil is felt in that shoulder.

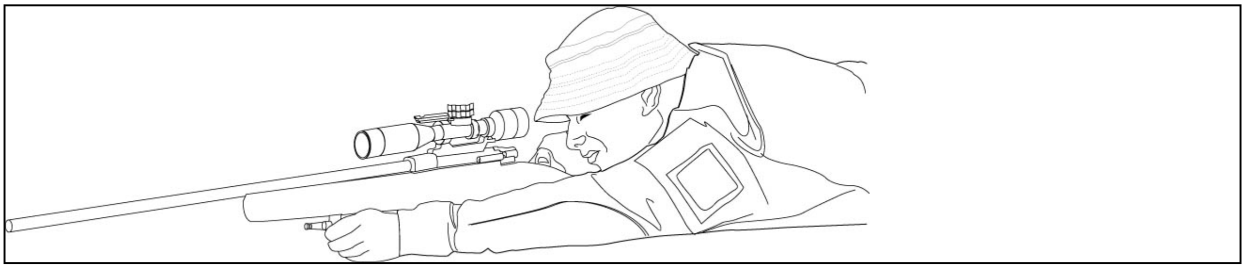


Figure 4-4: Hawkins Position

34. **Modified Hawkins**. When the ground is very soft or when using certain slopes it may not be possible to obtain sufficient depression of the muzzle to use the normal Hawkins position. In the modified position the butt is placed in the shoulder or on the upper arm.

OTHER POSITIONS

35. When firing from locations, which do not permit the use of the prone position, the sniper may employ other modified supported positions. These positions are used only as a last resort.

36. **Standing**. The standing position can be utilized when firing from a tree line, fire trench or prepared hide. Care must be taken to ensure a correct shooting position. Use of a tree limb, sandbag or other solid objects to support the firing position may be necessary.

37. **Sitting**. The open or crossed leg position (see Figure 4-5) can be employed using a solid object for support, e.g. rifle rest, log, branch.

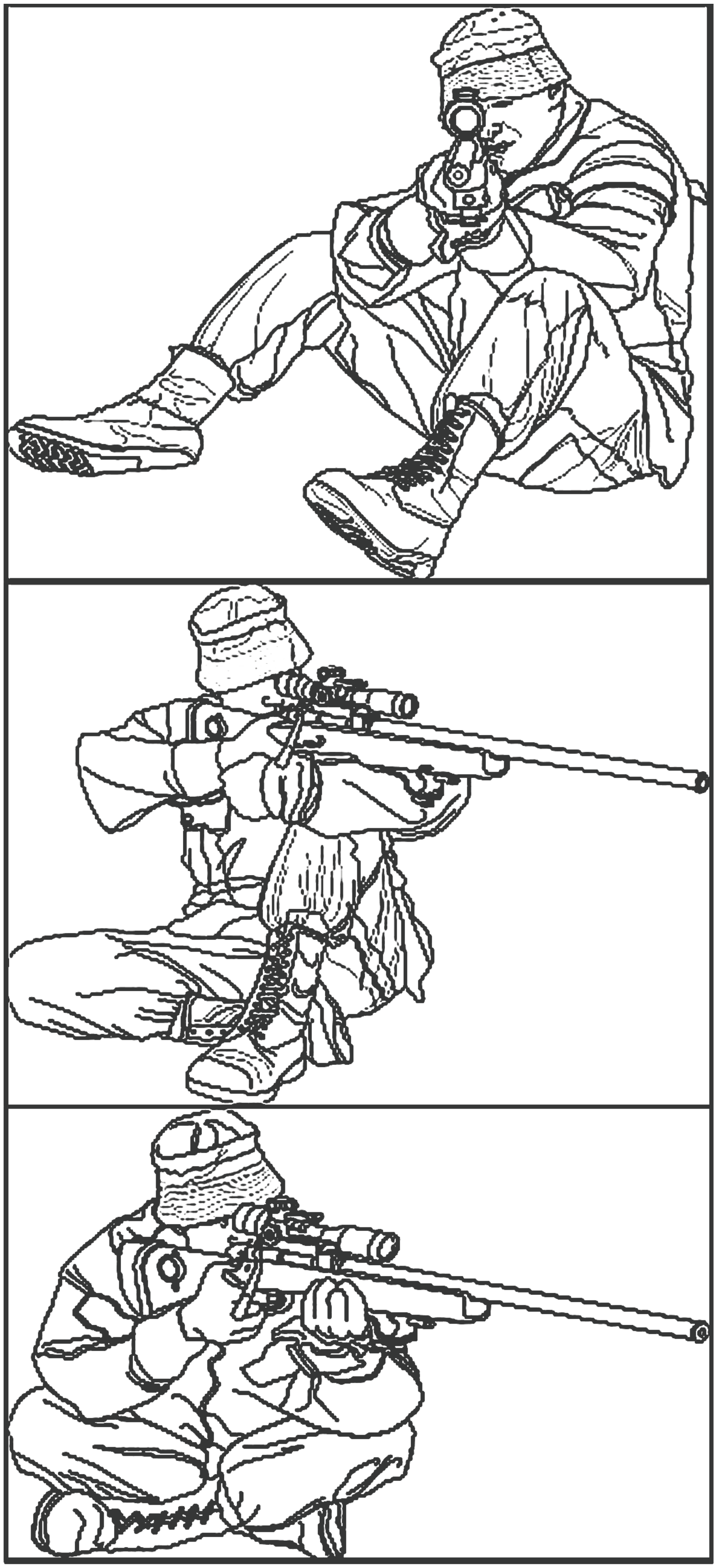


Figure 4-5: Sitting Positions

38. **Kneeling**. The kneeling position also can be employed using a rifle rest or other support. The sniper should not remain in the kneeling position for an extended time due to its instability, however the kneeling position does provide for lateral movement when engaging a moving target.

39. Use of the sling in the standing, kneeling or sitting position provides for added stability in those positions. The sniper will assess the need in accordance with his situation at the time.

40. **Using your Partner as a Support**. When making a hasty shot, there is often not enough time to prepare a support to fire from. In these instances, the observer may be used as a support. In all positions, both team members must keep their eyes down range observing enemy actions. The observer must stop breathing while the shot is fired in order to provide a stable shooting support. The sniper team must communicate closely in order to effectively fire from this position:

a. **Prone**. In the low prone position (see Figure 4-6) the observer lies down on his stomach and the rifle is placed across the small of his back. In this position the observer can effectively utilize the spotting scope or binoculars to call the fall of shot.

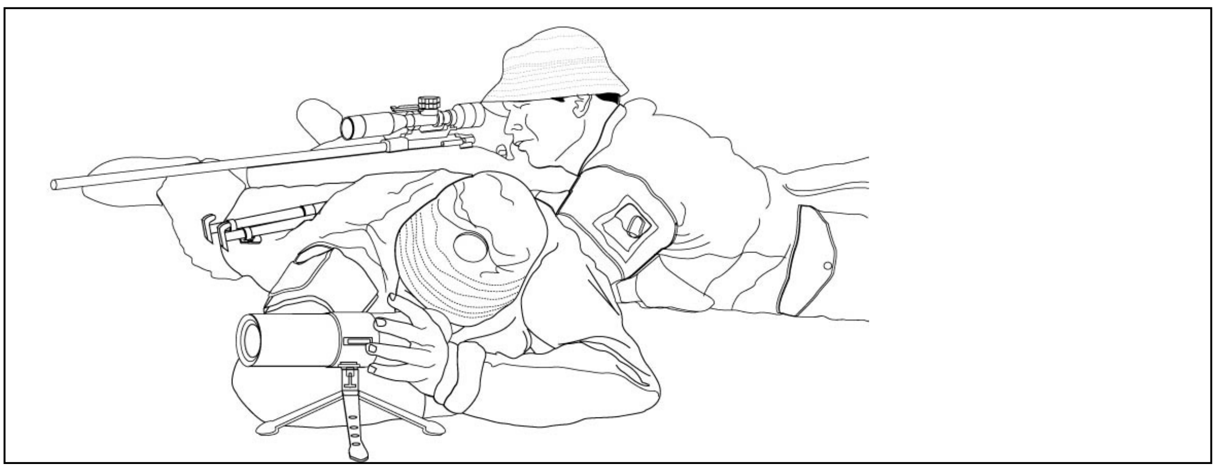


Figure 4-6: Prone with Partner as Support

b. **Kneeling and Sitting**. In these positions (see Figure 4-7) the observer is seated in front of the sniper with his back to him. The rifle is rested over the shoulder of the observer.

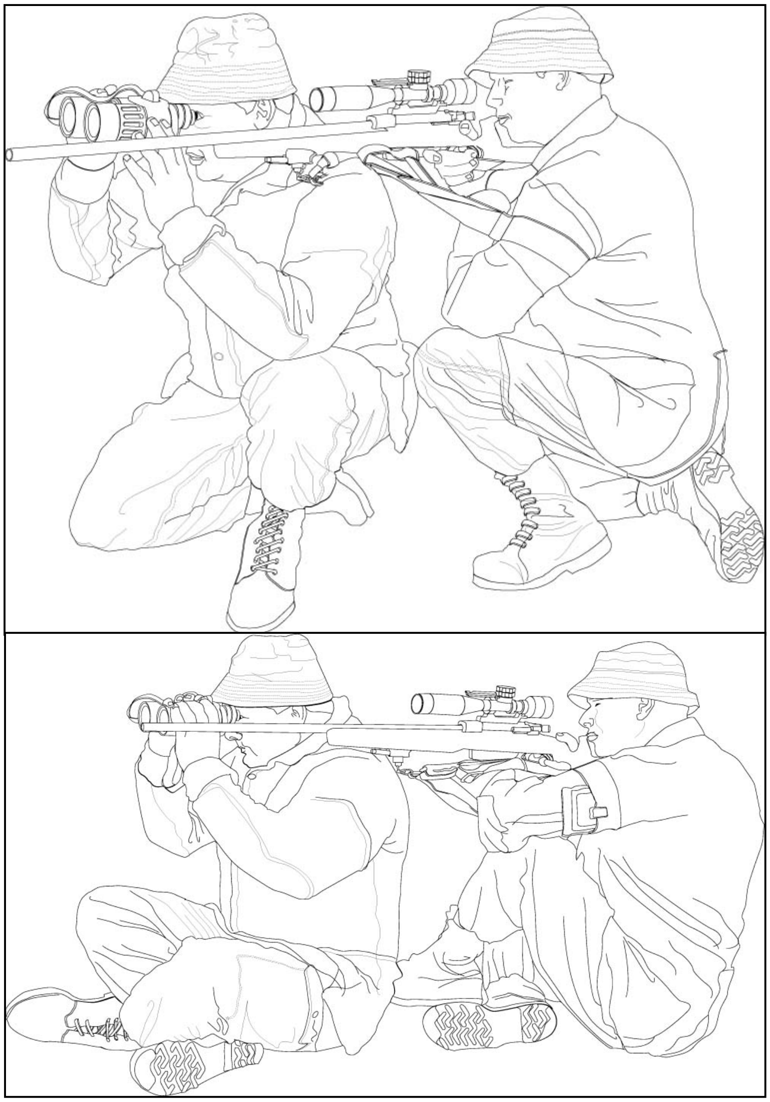


Figure 4-7: Kneeling and Sitting Using Partner as Support

c. **Standing**. In this position (see Figure 4-8) the observer is standing with his back to the sniper. The sniper cups the weapon with his hand on his observer's shoulder.



Figure 4-8: Standing with Partner as Support

NOTE

The observer will be restricted to looking down range with his binoculars only in the sitting, kneeling and standing positions.

SECTION 5
APPLICATION OF FIRE

INTRODUCTION

41. Conventional range practices fired by a sniper are simply extensions of elementary training designed to give the sniper confidence in both his weapon and his ability to use it. Having gained this confidence he can start field firing training knowing that he is capable of dealing with all targets he is likely to meet.

42. This confidence can only be obtained if the sniper fully understands and applies the basic principles of good shooting.

43. The sniper must have a detailed knowledge of the theory of a group and theory of small arms fire detailed in B-GL-318-006/PT-002 *Part II Shoot to Live*. With this knowledge the sniper can interpret wind and light conditions, and make elevation and deflection corrections for a first round kill.

CONDITIONS AFFECTING ACCURACY

44. **Introduction**. The sniper must meticulously take into account all the factors, which can affect shooting such as wind, ambient light, temperature, presence of haze, reflections, different ammunition lot, etc. A change in any one condition, which may be almost imperceptible, can result in a displacement of the strike pattern on the target. Corrections, which are not based on a true appreciation of the probable cause, may then only serve to compound the error. Deviations in the pattern of shooting should cause the sniper to reappraise all such factors. Has he correctly identified all the factors and weighed their effect? Has he properly applied the minimum adjustments to his sights and his shooting which is required by the new set of conditions? Does his shooting now confirm his latest assessment of the factors? A brief description of some of the factors which affect the sniper's shooting performance, their calculation, and their application are given in the following paragraphs.

45. **Winds**. Winds affect shooting in a variety of ways. The sniper must be thoroughly familiar with wind effects and know how to calculate sight adjustments. These are described in the following sub-paragraphs:

a. The effect of wind is two-fold: first, on the bullet as it travels to the target and second, on the firer, (i.e. making it more difficult for him to hold and aim the rifle). The sniper must determine wind direction and velocity. He may use certain indicators to accomplish this, e.g. range flags, smoke, trees, grass, rain, sense of feel, and hand held anemometers. However, the most preferred method of determining wind direction and velocity is reading mirage, if present (see paragraph 46). In most cases it is relatively easy to determine the direction the wind is blowing simply by observing the indicators:

(1) A common method of estimating the velocity of the wind during training is to watch the range flag (see Figure 4-9). The sniper determines the angle between the flag and pole, in degrees, then divides by the constant number 3. The result gives the approximate velocity in kph.

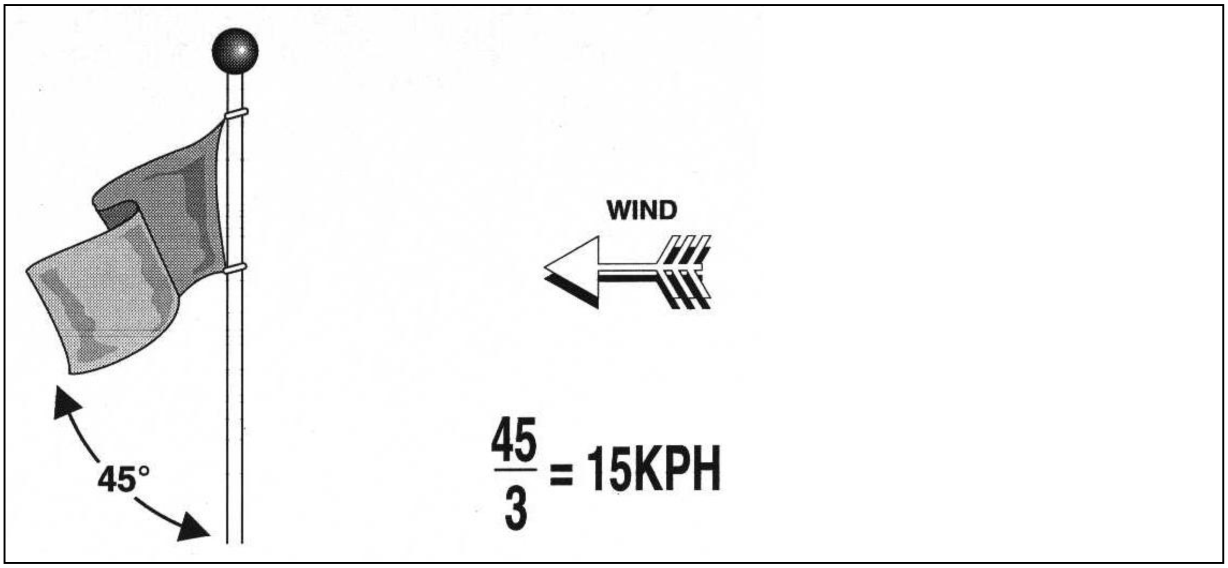


Figure 4-9: Determining Wind Speed

(2) If no flag is visible, the sniper holds a piece of paper, grass, cotton, or some other light material at shoulder level, then drops it. He then points directly at the spot where it lands and divides the angle between his body and arm by the constant number 3. This gives the approximate wind velocity in kph per hour.

(3) If for some reason these methods cannot be used, the following information is helpful in determining velocity. Winds under 5 kph per hour can barely be felt but they may be determined by drifting smoke. With a 10 kph wind the leaves in the trees are in constant motion. With a 15–20 kph wind, small trees begin to sway, and with a plus 20 kph wind large trees begin to sway.

b. Wind effect near the target or the firing position is often misleading since the bullet may have been affected by unseen winds between the two points. The sniper must therefore also consider the wind over the ground between firing position and target. He must be wary when the wind is at an angle to the line of fire because the size of the angle will dictate in part the amount of allowance necessary.

c. A table of sight adjustments for various wind strengths is given in Figure 4-10.

d. Wind strength is classified as:

(1) mild up to 10 kph;

(2) fresh 10 to 15 kph; and

(3) strong 15 to 30 kph.

e. Wind effect calculations are based upon wind strength, described in sub paragraph d above, the range to the target, and the direction of the wind, in that order. When the wind strength classification has been determined, sight settings will be applied using the information given in the Windage Chart (see Figure 4-10).

WINDAGE CHART

Range to Target(m)	Wind Speed				
	5 kph	8 kph	13 kph	19 kph	24 kph
100	0	.5	.5	1	1
200	.5	1	1.5	2	2.5
300	1	1.5	2	3	4
400	1	2	3	4.5	5.5
500	1.5	2.5	4	6	7
600	2	3	5	7	9
700	2	3.5	6	9	11
800	3	4.5	7	10.5	13
900	3	5	8	12	15
1000	3.5	6	9.4	14	18

NOTE

Values indicated are in minute of angle (MOA) corrections required into the wind direction, assuming the wind is 90º across the sniper's front. For oblique angle winds decrease these corrections.

Figure 4-10: Windage Chart

f. A common wind estimation technique adopted by some NATO countries is what is referred to as "Baseline Wind". It is based on a strong wind approaching from the three or nine o'clock position. Note: this method is used as a guide only and is intended as supplementary information for snipers in their training. A strong wind will make a range flag stand straight out 90 degrees to the line of fire. The sniper then determines his range then applies the same number of minutes (for deflection into the wind) as the first number of the range the sniper is at (e.g. 400 m = 4 minutes, 550 m = 5.5 minutes etc.). Should the range flag continue to be 90 degrees to the line of fire and drop half way the sniper would also drop the required amount of MOA required in half. Consequently, should the flag remain straight up but turn on a 45 degree angle to the line of fire the sniper would also cut his baseline wind in half.

46. **Mirage**. The mirage effect described below can be of value to the sniper to confirm or discount wind data obtained from other sources:

a. The mirage effect (see Figure 4-11) can be clearly seen on a hot day through binoculars or a telescope, and gives an indication of air movement when little or no wind is evident. The effect is seen with the naked eye in very hot weather. When conditions are still, the air rises vertically and is said to be a “boiling” mirage. Lateral movement is known as “drift”, and it is this movement that the sniper must learn to interpret. It is seen like a clear stream of water rippling over pebbles, and the art of judging or classifying a deflection allowance from the mirage “drift” effect is one which can only be acquired through experience firing in such conditions (see Figure 4-12).

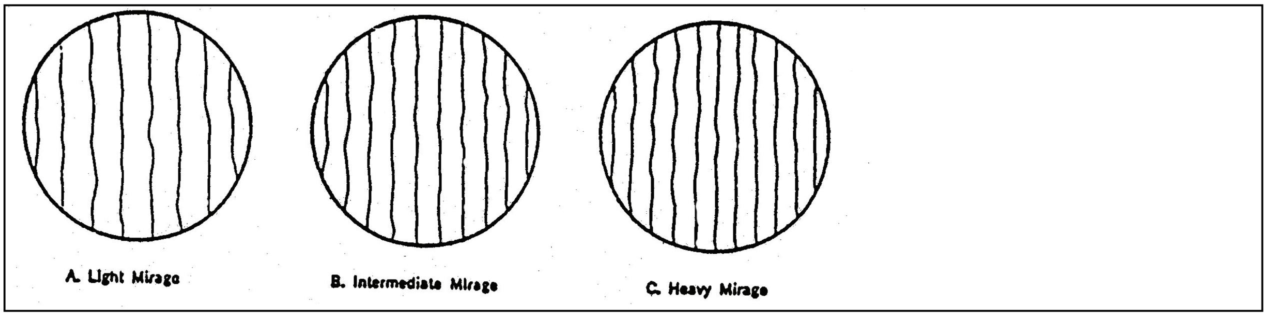


Figure 4-11: Mirage Categories

b. The drift effect should be used to confirm wind allowance which has been judged by some other method. It should be remembered, however, that the flight of a bullet is usually over the top of the mirage affected area, and therefore, the “drift” effect can only be used as a rough guide. However, when no wind is apparent, any drifting mirage seen, particularly when firing at long ranges, is an indication that some wind allowance is necessary.

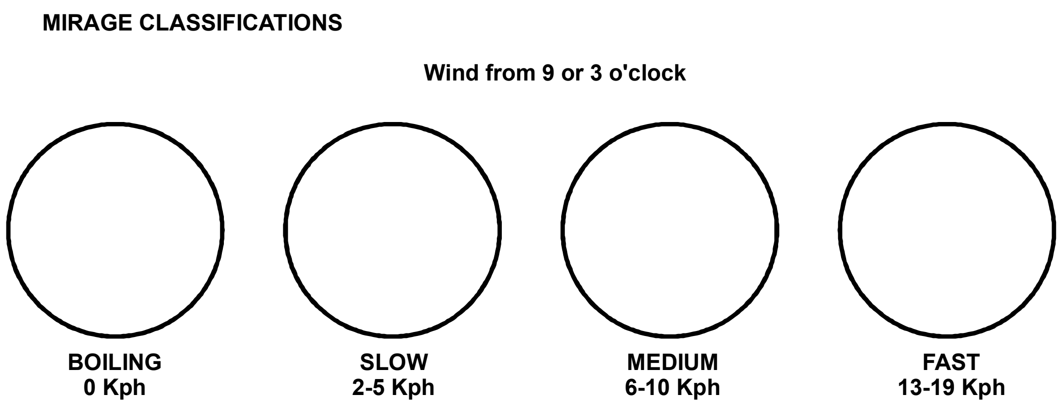


Figure 4-12: Mirage Classifications

c. There may be occasions when the mirage conflicts with information concerning wind direction and strength conveyed by some other means. The experience of the firer is all that can be relied upon in these circumstances.

47. **Temperature**. Temperature has a distinct effect on the elevation required to hit the centre of a target. An increase in temperature causes an increase in muzzle velocity. Hot weather normally will necessitate a decrease in elevation, while cold weather will necessitate a

corresponding increase. To minimize the effects of temperature changes the sniper must take special precautions with his equipment. Ammunition must NOT be allowed to lie in the direct rays of the sun, nor should a round normally be allowed to remain loaded in the chamber of a hot rifle.

48. **Light**. Generally shots will go high on dull, cloudy days, or in conditions of poor light, and they will go low when the light is bright and clear. However, the sniper should carefully maintain a personal record of light conditions and scores during range practices. This record should prove a useful guide to the effect of various light conditions on his shooting, and the sight adjustments he should make to improve accuracy.

49. **Rain**. The sniper must take special measures to protect weapon, ammunition and equipment from rain. It is not possible to keep all equipment dry during wet weather conditions, however the sniper must ensure that adequate measures are in place to minimize the effects that moisture will have on ammunition and chamber pressure. If this is not possible, allow for the effect by reducing elevation. Some protective measures are:

a. The working parts of the rifle and the ammunition should be kept as dry as possible, because moisture can cause a shot to perform erratically.

b. The sniper must produce or acquire a method of protecting the scope from the elements. A rain shield is a useful aid to keep the front lens of the telescope dry. The sniper should always carry a piece of rag with which to dry the scope, and a separate one for ammunition or weapon.

50. **Clothing**. The sniper should always wear a suitable shooting jacket when conducting marksmanship training, even during days of extreme heat. The sniper needs to become used to wearing extra clothing so that firing in a ghillie suit will not affect his marksmanship.

SOURCES OF ERROR IN SHOOTING

51. **The Rifle**. If a rifle is shooting well, it should not be tampered with. If it is not shooting well, the sniper should carefully check it for possible defects. Some features to be checked are:

a. Check the barrel and receiver for correct seating in the stock. It is possible that looseness or excessive tightness is affecting the natural jump of the rifle. If this cannot be rectified the rifle should be taken to the unit armourer.

b. The telescopic sight is held in place on the rifle by scope mounts, which are screwed firmly in position. In spite of this, looseness can occur, and the screws and mounts should be checked if any movement is detected.

c. The single stage trigger is adjustable for weight of trigger pull, backlash, and creep. The short crisp pull gives minimum delay between thought and shot. A trigger which has lost its balance and pull weight can cause errors in shooting. Have the trigger mechanism examined and adjusted if it becomes suspect.

d. Errors caused by the rifle are usually connected with some interference with normal jump. The causes can be numerous and varied, and while only the main individual faults are dealt with here, it must be remembered that they may not occur in isolation, and may be combined with some other fault:

(1) **Barrel Neglect**. This causes increased friction and decreased accuracy. The sniper should always maintain a spotlessly clean barrel and must remember that once the original condition inside a barrel has been damaged it can never be fully regained.

(2) **Oily Barrel**. The effect is similar to that of a neglected barrel, and causes inaccurate shooting. The effect lasts only for the first 2 or 3 rounds, but these are important, vital shots to a sniper.

(3) **Oil in the Chamber or on the Face of the Bolt**. This is a greater hazard to accurate shooting than oil in the barrel because its effect will persist much longer, altering the jump and causing abnormal chamber pressure.

(4) **Nickelling in the Barrel**. Patches of nickel residue from the bullet, which are deposited on the lands of the barrel, can cause inaccurate shooting. The effect is slight, but nevertheless the sniper must watch for its appearance, which is seen as rough, light coloured streaks, particularly in a worn barrel. These patches can be removed by the sniper.

(5) **Loose Screws**. Loose screws, particularly bedding screws, can alter the jump of the rifle, and must be checked routinely for a setting of 65 in/lb of torque.

(6) **Hard Surface**. Resting a rifle on a hard surface will alter the jump by varying amounts depending on which part of the rifle is rested. Since a sniper may have to do this at some time, it is important to become familiar with the degree of error encountered in any given position.

(7) **Hot Barrel**. When heated by firing, some barrels tend to shoot slightly high. The sniper should test the effect on his rifle. He should seldom need this knowledge, however, since the rate of sniping fire is rarely sufficient to heat a barrel.

52. **Ammunition**. Negligent handling of ammunition can lead to inaccurate shooting. Potential problems which can arise with ammunition are listed below:

a. Oily or dirty ammunition will have the same effect on accuracy as oil in the chamber.

b. Wet ammunition will cause shots to go high. The sniper must either keep ammunition dry or allow it to become thoroughly wet and deduct from any elevation used.

c. Dirt, sand or snow on a bullet can cause an inaccurate shot, and may also scratch or bulge the barrel.

d. Ammunition that is allowed to get hot, either by lying in the sun or by having been left in a hot rifle chamber, will cause inaccuracy. Shots will usually go high.

e. Ammunition performance may vary slightly from batch to batch. The sniper should use one batch for as long as it is practicable, and then check his zero for elevation when the batch is changed.

f. Tracer ammunition has a different trajectory from ball ammunition. Tracer will also cause more barrel wear than ball, since the effect of tracer is very corrosive. Tracer ammunition must only be fired for a specific purpose or as a last resort. The weapon must be cleaned as soon as practical after firing tracer rounds.

DUSK AND DAWN SHOOTING

53. The telescopic sight enables accurate shooting at night. With the telescopic sight, aim can be taken at anything that can be seen, even if only in outline, with the naked eye. This is useful under conditions that exist at dusk and dawn, and when there is moonlight. The enemy will try to carry out many operational tasks at such times, so the sniper must be familiar with the advantages gained using the telescopic sight.

54. It is important to understand that visibility is determined by the contrast between the target and its background, and not just the amount of light available. For example, a target that is silhouetted against a skyline can be aimed at using the telescopic sight even when it is very dark.

55. **Night firing considerations are**:

a. **Light Gathering**. The telescopic sight is coated internally with a high efficiency, low reflective coating which allows available light to be directed by the lens through the sight rather than being reflected away. Approximately 91% of all available light is transmitted to the sniper's eye. This light gathering capability of the sight permits the sniper to accurately engage targets under low light conditions.

b. **Observing at Night**. The sniper fires normally from a position low to the ground. Targets outlined against the night sky are silhouetted in plain view and may be engaged with the telescopic sight in very low light conditions. The sniper may use the sight to observe in very low light conditions by using offset vision. The sniper scans the field of view in a figure eight pattern sweep to see the entire area with the outer edges (rods) of the eye.

c. **Illumination**. The sniper has the ability to call for battlefield illumination to increase available light. This illumination should be directed to a flank or to the rear of the sniper so that the sniper's eyesight is not severely hindered. When illumination is directed to the rear of the sniper the enemy is forced to observe

directly towards the light source. This decreases his natural night vision capability, and also optical night vision devices will magnify the light hindering searching the ground. The sniper is free to fire within the first 15 to 30 seconds of illumination. After this time his chances of compromise are increased as the enemy's eyes adapt to the light. Also, the enemy will be forced to look into the bright light to spot the sniper's position. The sniper should never launch parachute flares or ignite trip flares from his position. Trip flares, if used, should be set in the kill zone, on the opposite side of the tree from the expected enemy approach, to be tripped by the targets. This ensures that there are no signs to indicate the sniper's position.

d. **Judging Distance**. Estimating distance is difficult at night when not all the ground is visible and target detail is not clear. The reticle of the sight and the size of the object will not however be severely affected. The sniper may use the reticle to calculate distance at night provided he knows the actual size of what he sees (e.g. the target's head). The enemy however does not have this capability since the sniper will not present a target which permits the use of optics for calculating distance.

e. **Sight Picture**. The reticle should be highly visible within the sight picture. Reticle fading is a sign of inadequate light. The amount of light required to see the reticle clearly is different for each firer based on their eyesight. Experience is the only method of determining when it is too dark and illumination must be used.

f. **Reducing Weapon Signature**. While it is next to impossible to eliminate flash at night, it is possible to confuse the enemy as to the exact location of the flash, or to limit the chance of your exact position being located, through effective use of depth and prepared positions.

g. **Depth**. Where possible, the sniper should fire from within or through thin brush and bushes. These bushes do not adversely affect the sight picture but can seriously affect the bullet trajectory. When used properly depth will confuse the enemy's sense of distance and return fire should fall short of the sniper's position. This technique is a temporary solution only and the sniper will be forced to move once enemy fire is directed towards him.

h. **Single Shots**. If the sniper fires no more than one shot from any one position, or takes long pauses between shots, the chances of compromise are reduced. Long periods of searching ground at night cause the observer's eyes to become tired and the observer will be slightly less attentive as fatigue increases.

i. **Defilade**. The sniper should select a fire position that blocks the line of sight to all but his intended target area. The larger the area of observation at night the more enemy there may be who can observe your flash.

j. **Weapon Preparation**. The weapon must be properly prepared for firing. All oil must be removed from the barrel and chamber. Oil and cleaning fluids will burn and increase the flash of the weapon.

k. **Battle Noise**. Where possible, the sniper should fire in conjunction with artillery, mortars or machine-gun fire to mask the sound of his shot. The distinctive crack and thump of the sniper rifle will indicate to an experienced ear your approximate direction and distance.

INACCURATE SHOOTING CHECK LIST

56. If poor shooting begins to happen for no apparent reason, the sniper must think and check logically to ensure that all relevant conditions have been allowed for and none have been over-emphasized. If this check does not reveal the source of error, he should check his equipment and, in particular, the following points:

a. **Rifle barrel**:

(1) clean;

(2) no oil;

(3) no metal fouling; and

(4) no bulge.

b. **Bedding**:

(1) bedding screws torqued to 6 in/lb;

(2) barrel not touching the stock; and

(3) no bedding compound deterioration.

c. **Ammunition**:

(1) not oily or dirty;

(2) not wet;

(3) not heated by exposure to direct sunlight; and

(4) no change of lot number.

d. **Sight**:

(1) correct sight setting;

(2) sight mount rings tight;

(3) sight mount not loose;

(4) no looseness in drums;

(5) lens not loose;

(6) no parallax; and

(7) sight correctly focused.

e. If the above check does not remedy the fault, have another sniper fire the rifle to determine if the fault is with the firer.

SECTION 6
ZEROING

GENERAL

57. Before a sniper can zero his rifle he must have a basic knowledge of Application of Fire (see Section 5). The zero of a rifle is the sight setting in elevation and windage required to place a shot in the centre of the target, at a given range, when no wind is blowing.

ZEROING THE SCOPE

58. The scope will allow the sniper to shoot to 800 m using the elevation drum and to farther ranges using the mil dots in the reticle:

a. **Elevation Drum**. This drum has a course adjustment scale and a fine tune scale. The course adjustment has the ballistic come ups built in for 100 to 800 m, with a total of 38 minutes of angle (MOA). The fine tune scale underneath it has + or – 3 MOA in ½ MOA increments (clicks) for compensating for temperature, different ammunition lots, sniper partner's zero, shooting at high angles in relation to the target, etc. When zeroing, the elevation fine tune scale is set on "**0**".

b. **Windage Drum**. This drum has 8 MOA left and right in ½ min increments (clicks). When zeroing, the windage drum is set on "**0**". If the windage adjustment on the drum is not enough to compensate for the existing wind the mil dots on the reticle may be used. Each dot corresponds to 3.3 MOA.

c. **Use of Allen Screws**. There are 2 Allen screws on each of the elevation and windage drums that are used for zeroing. One, the zero adjustment screw, is in the top center of each drum. The other, the zero set screw, is on the side of the drum. There are thus four screws in total: one elevation adjustment screw, one windage adjustment screw, one elevation set screw, and one windage set screw. The set screws serve to lock the adjustment screws in place. They have no effect on elevation and windage adjustments. The 3 mm and 1.5 mm Allen wrenches are used to adjust these screws.

d. **Boresighting**. Boresighting will be conducted by weapons technicians or snipers prior to use. Small arms culminators are available to confirm this when necessary.

e. **The Zeroing Process**. The scope can be zeroed at any known distance but winds will be a factor at greater distances. There will be a small amount of parallax in the scope at 100 m if parallax was focused at 300 m. Care must be taken to ensure a consistent stock weld for every shot fired. In this example zeroing is carried out at 300 m. The sniper and his observer use the following procedures to zero the rifle at 300 m, remembering to use a 3 mm and 1.5 mm Allen wrench:

(1) The sniper sets the elevation drum on “**3**”, elevation fine tune scale on “**0**”, and windage scale on “**0**”.

NOTE

The zero adjustment screw will not be turned more than ¼ turn. Sights requiring adjusting of more than ¼ turn will be returned to the weapon technicians for remounting.

(2) The sniper aims at the bottom right or left of a single target patch and fires a 3 or 5 round group. The sniper should not worry about the location of the group.

(3) If the mean point of impact (MPI) is not on the point of aim, adjustments are needed to bring the group to the centre of the patch. Based on these adjustments the observer then loosens the elevation and windage set screws so adjustments can be made to the zero adjustment screws.

(4) Having loosened the set screws, the observer can now move the zero adjustment screws. Remember, the set screws have no effect on elevation or windage changes. The set screws lock the zero adjustment screws in place. The zero adjustment screws work the same way as a wood screw:

(a) to move the MPI RIGHT, move the windage adjustment screw counter-clockwise;

(b) to move the MPI LEFT, move the windage adjustment screw clockwise;

(c) to move the MPI UP, move the elevation adjustment screw counter-clockwise; and

(d) to move the MPI down, move the elevation adjustment screw clockwise.

(5) Any adjustments made should be slight. A ¼ turn will move the MPI considerably. Once the desired zero is on the scope, the observer tightens

the set screws, being careful not to over tighten them and damage the zero adjustment screws. Pencil marks on the adjustment screws and the drums will assist in determining correct zeroing.

(6) The sniper fires another 3 to 5 round group. The observer makes any necessary adjustments to bring the MPI to the point of aim.

(7) The sniper continues firing 3 to 5 round groups until both the sniper and observer are confident with the shot group position.

59. **Field Expedient Zeroing**. Many situations can require the sniper to zero his rifle in the field. The sniper may have received a new rifle, may have dropped his rifle and disturbed its settings, or may need to reconfirm his zero. He may also need to re-zero due to climatic changes. It is important for the sniper to zero the rifle on a known distance range. If the rifle is not zeroed on a known distance range, the cam system in the scope cannot function properly. When a known distance range is not available, the rifle may be zeroed using the following method:

a. Select a target so that the observer can see the strike of the rounds.

b. Determine the exact range to the target and adjust the scope accordingly.

c. Fire on the target, having the observer spots the rounds. Adjust the scope using the same procedures as for known distance.

SECTION 7
ADVANCED SHOOTING TECHNIQUES

INTRODUCTION

60. Advanced techniques of marksmanship enable the sniper to hit a target without holding his sights directly on that target.

TYPES OF MOVING TARGETS

61. The sniper must fully understand types of moving targets and how to engage them.

62. **Moving Target**. This target is one which moves in a consistent manner and is in continual sight of the sniper as it moves across his field of vision. A walking or running man is an example of this type of target.

63. **Stop and Go Target**. This type of target moves from location to location with no set pattern in an erratic manner and is difficult to engage. As with the moving target, the sniper is able to maintain eye contact with the target while it is moving.

64. **Snap Target**. This target will only present itself for a short period of time before re-establishing cover. Unlike the moving and stop and go targets, the sniper can only observe this target during the brief periods it presents itself from cover.

TECHNIQUES FOR ENGAGING TARGETS

65. Very seldom during operations will a sniper be called upon to engage a fully visible stationary target. In reality the average sniper target will be a moving or fleeting target which is only exposed for a brief time. These targets are the most difficult to hit, and in order to engage them successfully the sniper uses one of two techniques, i.e. tracking or ambush. The tactical situation will dictate which technique the sniper will use.

66. **Tracking**. The sniper “tracks” or follows the target with the cross hairs placed ahead of the target according to the desired lead, using the mils scale in the scope for a reference point:

a. The tracking method is best employed from the sitting, kneeling, or standing position with a rest, since it is difficult to track a target with the rifle when the elbows are firmly planted. The sniper's natural point of aim should be ahead of the target, and he should track with that lead on the target until the trigger is squeezed.

b. The tracking method should be used in the following situations:

(1) When the sniper is extremely close to the target. Since the field of view of the scope is limited, this reduces the time that the target is visible in the scope.

(2) During a hostage or fire on command situation when the sniper must maintain constant aim on the target to remove the target at the specific moment required.

(3) When firing on a target moving at a high rate of speed.

(4) When engaging a target that is moving in an erratic manner, a track and hold technique is used.

c. While the target is moving, the sniper keeps the cross hairs centred as much as possible, adjusting his position with the target. When the target stops, the sniper quickly perfects his hold and fires.

67. **Ambush**. With this technique, the rifle is placed ahead of the target, allowed to remain stationary, and fired when the target reaches a predetermined point on the horizontal reticle line. The mils scale is again used as a reference. The target then “walks” into the bullet resulting in a hit. The ambush method should be used when:

a. the range to target is great enough (300+ m) to allow the sniper a sufficient field of view to align his cross hairs;

b. the target is moving at a constant, steady pace over a fairly well determined route (sentries, patrols, etc.);

c. targets are in known locations requiring the sniper only to observe and select the place and moment to fire (defensive works); and

d. engaging a snap target, e.g. when engaging a bobbing target:

(1) The sniper should begin looking for a pattern of exposure, such as an exposure every minute or so, or an exposure every day at a specific time.

(2) Once the pattern has been established, the sniper can aim in the general vicinity of the target just prior to the expected time, and at the moment of exposure can quickly acquire his point of aim and fire the shot.

68. Common errors made when engaging moving targets are:

a. The sniper has a tendency to watch the target and not his cross hairs. The sniper must consciously force himself to watch his lead point on the horizontal cross hair's mils scale.

b. There is a tendency for the sniper to buck, jerk, or flinch at the moment he fires as he tries to force the shot. This is particularly true when using the ambush technique.

c. The sniper might fail to apply windage when needed. Windage must be calculated for a moving target and dialed on the scope just as it is for engaging a stationary target. Failure to do this when acquiring leads on the range will result in unequal leads for targets moving left to right and right to left.

HOLDS

69. **General**. Holding for elevation or wind are techniques used only when the sniper does not have time to change his sight setting. Pinpoint accuracy is rarely achieved when holding since a minor error in range determination or lack of a precise aiming point might cause the bullet to miss the desired point; however, a hit anywhere on the body is normally disabling. A small error is acceptable in combat.

70. **Hold off**. Hold off is the procedure used to hit a target at ranges other than the range for which the rifle is zeroed. When aiming directly at a target at greater ranges than the zero range, the bullet will hit below the point of aim; and at closer ranges, the bullet will hit higher than the point of aim. Understanding this, and with a knowledge of trajectory and bullet drop, the sniper will be able to hit the target at ranges other than that for which the sights are set. The hold (point of aim) for battlesight settings of 300 and 500 m are given in Figure 4-13.

HOLD OFF TABLE C3A1

SIGHT SETTING	TARGET RANGE	POINT OF AIM
300 m	100	Waist line
	200	Waist line
	300	Center of chest
	400	Center of chest
500 m	100	Waist line
	200	Crotch
	300	Between crotch & knee
	400	Between crotch and waist
	500	Center of chest
	600	Top of head

Figure 4-13: Hold Off—Points of Aim

71. **Holding Off for Wind**. The sniper may use hold off to compensate for the effect of wind. The chart at Annex K illustrates the effect of wind on the bullet. It also indicates the necessary sight setting required to compensate for these wind effects, providing the sniper has time to make such adjustments. The sniper holds off for wind by aiming into it; if the wind is from the right, he aims to the right of his target the required distance, and, if the wind is from the left, he aims to the left. Adjustments for wind are always based on its estimated velocity. Constant practice in wind estimation can bring about proficiency in making sight adjustments or learning to hold off correctly. If a miss is fired and the impact of the round is observed, the sniper will note the lateral distance of his error and re-fire, holding off that distance in the opposite direction.

LEADS

72. The distance the sniper leads a moving target will depend on four variables: time of flight of the projectile (range to the target), speed of the target, wind effects, and angle of target movement relative to line of sight and wind effects:

a. **Time of Flight**. There is a time lag from the time the round is fired until the round impacts at the point of aim. This time lag, or time of flight, would allow a moving target to move out of the projectile's path if the round was fired directly at the target. Time of flight increases as range to the target increases. The proper lead on a moving target increases as range to target increases.

b. **Speed of the Target**. The speed of the target will be the most difficult variable to judge. The lead needed to engage a moving target will increase as the speed of the target increases.

c. **Wind Effects**. The sniper must consider how wind will affect the trajectory of the round, dial that data onto the scope, and hold his determined lead.

d. **Angle of Target Movement**. The angle of movement of a target is important since it changes the amount of lead required for target engagement. The angle of movement is determined by the portion of the target that is visible. This angle of movement is used to determine the amount of lead required to hit a moving target.

TYPES OF LEADS

73. **Leads are classified as**:

a. **Full Value Lead**. A full lead presents only one arm with half the body visible. The target requires a full value lead.

b. **Half Value Lead**. A half lead presents only one arm and over half of the back or chest. The target requires half of a full value lead.

c. **No Lead**. A target with both arms and the entire back or chest visible, which is moving directly towards or away from the sniper. No lead is required. The sniper would simply quarter the target and fire as he would for a stationary target.

USING THE MILS SCALE FOR LEADS

74. Once the lead has been determined, the sniper should use the mils scale in the sniper scope for a precise hold. The mils scale can be mentally broken down into .25 mils for leads just as it is for range estimation. This point on the mils scale then becomes the sniper's point of concentration, just as the cross hairs intersection is for stationary targets:

a. the sniper places total concentration on the lead point as the target approaches; and

b. once the target reaches the lead point, the sniper applies uninterrupted trigger pressure to engage the target at the exact moment the leading edge of the target meets the lead point.

75. **Angle of Movement**. A man walking at a 90° angle is considered at a full value lead as follows:

a. 100 m to 200 m, lead 0 to .25 mil;

b. 300 m to 400 m, lead .25 to .50 mil; and

c. 500 m to 600 m, lead .75 to 1.25 mil.

NON-LEVEL SHOOTING

76. Most firing conducted by the sniper team is over level or relatively level ground. There will be occasions however where the team will find itself in a non-level engagement situation (e.g. during Mountain Operations, Internal Security or Urban Operations). The sniper must understand that firing up or down angle bullet impact will be above his point of aim unless corrective action is taken. How high the strike of the round is will depend on range and angle to the target. The following table can be used as a rough guide during training, but once again the sniper must compile his own adjustments through experience to determine the reduction in MOA for various angles and ranges.

NON-LEVEL SHOOTING TABLE SLANT IN DEGREES

RANGE	5	10	15	20	25	30	35	40	45	50	55	60
100	.01	.04	.09	.16	.25	.36	.49	.63	.79	.97	1.2	1.4
200	.03	.09	.2	.34	.53	.76	1	1.3	1.7	2	2.4	2.9
300	.03	.1	.3	.5	.9	1.2	1.6	2.1	2.7	3.2	3.9	4.5
400	.05	.19	.43	.76	1.2	1.7	2.3	2.9	3.7	4.5	5.4	6.3
500	.06	.26	.57	1	1.6	2.3	3	3.9	4.9	6	7.2	8.4
600	.08	.31	.73	1.3	2	2.9	3.9	5	6.3	7.7	9.2	10.7
700	.1	.4	.9	1.6	2.5	3.6	4.9	6.3	7.9	9.6	11.5	13.4
800	.13	.5	1	2	3	4.4	5.9	7.7	9.6	11.7	14	16.4
900	.15	.6	.3	2.4	3.7	5.3	7.2	9.3	11.6	14.1	16.9	19.8
1000	.2	.7	.6	2.8	4.5	6.4	8.6	11	13.9	16.9	20.2	23.7

Range given is in true range (m), not map distance.
Values indicated are MOA drop required.

Figure 4-14: Non-Level Firing Table

ALTITUDE/BAROMETRIC PRESSURE

77. With the decrease in air pressure at higher altitudes, air becomes less dense. Any bullet traveling through less dense air will be more efficient, causing the impact to go higher than normally expected. The sniper must understand this effect and how to correct for it. The following chart may be used as a rough guide to shooting at altitude but, as with all advanced shooting techniques, the sniper is expected to develop and record personal shooting tables.

RANGE (m)	2500 ft ASL	5000 ft ASL	10000 ft ASL
100	.05	.08	13
200	.1	.2	.34
300	.2	.4	.6
400	.4	.5	.9
500	.5	.9	1.4
600	.6	1	1.8
700	1	1.6	2.4
800	1.3	1.9	3.3
900	1.6	2.8	4.8
1000	1.8	3.7	6.0
Values indicate MOA drop required ASL—Above Sea Level			

Figure 4-15: Altitude Firing Table

OFFSET SHOOTING PROCEDURE

78. **General**. The purpose of offset shooting is to enable the sniper to accurately engage a target which he cannot physically see through his weapon's optic. This is best illustrated in urban operations, where the sniper must engage obscured targets that are located inside darkened rooms or behind lightly structured walls or barriers. The observer, using his spotting scope, binoculars or Vector LRF, positions himself so that he has an unimpeded view of the target, and then relays points of aim and corrections to the sniper which enable him to engage an unseen enemy.

79. This is made possible by the increased magnification capability of the observer's spotting scope and his ability to adjust his position to effectively see the target. Adjusting a firing position is not always possible or practical for the sniper due to the tactical situation or lack of suitable support in the position of observation. Factors which may necessitate the use of offset shooting procedures are as follows:

a. distance from the target;

b. angle of the sun;

c. firing angle to the target;

d. shadows on the target; and

e. obscuration of targets concealed behind lightly structured partitions, semi-enclosed walls, and parapets.

80. These conditions will prevent the sniper from being able to acquire a line of sight or point of aim to destroy the target. The offset shooting process is only as effective as the observer's ability to make the required calculations, based on the known dimensions of a reference point that the sniper will be aiming at, and the angle which the observer is offset from the sniper. Ideally, the offset angle should be minimized in order to reduce the angular refraction that can affect the observer's perception of the target in relation to the "Gun to Target" (GT) angle.

81. In order for the sniper to shoot an unseen target the offset shooting procedure is conducted as follows:

a. Determine the distance to the target.

b. Select a reference point close to the target that both the observer and sniper can easily identify. An example would be the bottom left corner of a window frame.

c. The observer must first determine the horizontal distance, then the vertical distance from the reference point to the center of the target. This can be done either by estimation or by using the vector laser range finding binos as taught.

d. Concurrently, the sniper applies adjustments to the scope based on wind conditions and distance to the target.

e. With the sniper aiming at the reference point, the observer must give him the calculated correction to be applied on the sniper's optic, based on the horizontal and vertical distances in order to place the bullet in the center of the target.

f. The sniper then aims at the reference point and fires.

82. **Example of Offset Shooting Calculations**:

a. Determine the range to the target: 200 m.

b. Select a refernce point: Bottom left corner of the window frame.

c. Measure or estimate the horizontal distance from the reference point to the center of the target: 34 cm (13 in)

d. Measure or estimate the vertical distance from the reference point to the center of the target: 30 cm (12 in)

e. The sniper applies distance and wind adjustments to the sight. E.g. Elevation for 200 m and windage for a mild left to right wind.

f. With the point of aim being the reference point, deteremine the amount of windage and elevation required to be applied the scope in order to place the hit in the center of the target. E.g. Metric scope: add 34 clicks right and 30 clicks up. Imperial scope: add 6.5 moa right 6 moa up.

g. The sniper then aims at the refernce point and engages the target.

83. A simpler but less accurate method for offset shooting can be done if the observer is using an optical device with a Mil Dot reticule pattern. The procedure is as follows:

a. Determine the distance to the target.

b. Determine a common reference point that both the sniper and observer can see.

c. The observer places the cross hair of his optic onto the center of the target and then relays the horizontal and vertical distances, in Mils from the reference point to the sniper. E.g. .7 Mils right, 2.1 Mils up

d. Concurrently the sniper applies windage and elevation to the sight based on wind conditions and target range.

e. The sniper using his own reticule pattern places his crosshair in the correct position based on the information provided by the observer. E.g. .7 Mils to the right of, and 2.1 Mils above the reference point.

f. The sniper then fires the shot.

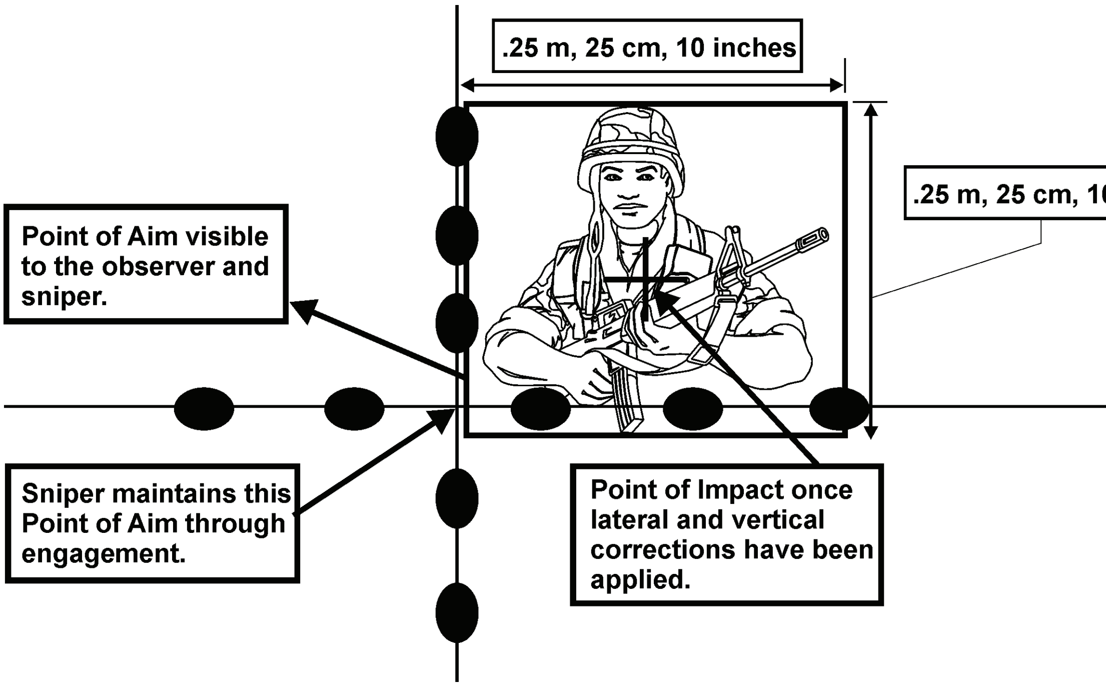


Figure 4–16: Offset Shooting

REVERSE IMAGE ZERO

84. It is possible to take advantage of the flat trajectory of the 7.62 Norma match round in situations where there are multiple targets at varying distances out to 450 m. At the highest point in its flight, at a range of 450 m, the bullet is only 57 cm (22.4 in.) above the axis of the barrel (see Figure 4-17). This allows the sniper to set his bullet drop compensator (BDC) to 450 m. Turn the BDC halfway between 400 and 500 m, aim at the bottom of the kill zone on any target within a 450 m range, and the fall of shot will be within the kill zone. This method would be used when the sniper must engage multiple targets in a situation where there is no time for accurate judging of distance or elevation adjustments. The spotter must keep the sniper informed of wind conditions and the appropriate hold-off in order to keep the fall of shot horizontally centered on the kill zone. The culminating point of the .50 cal Match round fired at 600 m is 87 cm (34 in). Place the LRSW elevation setting for this range and aim at the groin of soldiers within this distance and the shot will fall within the kill zone. This method can be used on materiel targets as well. The sniper must determine at what range the culminating point of the round will correspond to the height of the target component and set the sight to that setting. As long as the sniper is within that range and aims at the bottom of the target component, the round will fall within the desired area.

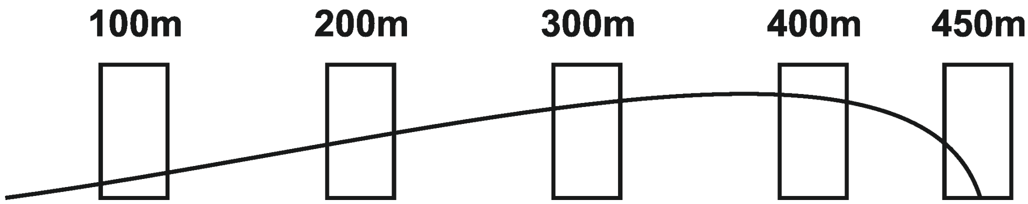


Figure 4–17: Reverse Image Zero

NIGHT OBSERVATION DEVICE LONG RANGE (NODLR)

85. The NODLR can be employed as an aid to spotting fall of shot. NODLR characteristics make it possible for spotting fall of shot in night shooting scenarios. The NODLR is a thermal imaging device that may detect the heat signature created by the bullet as it strikes the target area. This method is best suited to Urban Operations where the fall of shot is easily observed on vertical surfaces. In order to use this method to full effect, the spotter must know how the reticle pattern in the NODLR relates to the reticle pattern in the Unertl scope in order to translate adjustments from one device to the other. The observer positions himself so as to see the target area. It is not necessary for the observer to be co-located with the sniper, however both the observer and the sniper must have an unobstructed view of the target area and be within the same arc of observation. Using sniper dialogue, the observer calls the fall of shot and gives the necessary corrections. It is possible to use the hold-off method to great effect as the target area is usually easily measured by virtue of the standard dimensions commonly used in urban construction. In order to become proficient in this type of scenario the sniper and observer must train together and practice both spotting the fall of shot and their sniper dialogue.

FACTORS AFFECTING LONG RANGE TRAJECTORY

86. The sniper shooting the MRSW is familiar with conditions that affect trajectory such as temperature and non-level shooting. When firing at long range with the LRSW, however, the sniper must have an excellent understanding of the factors that affect trajectory in order to properly employ the LRSW effectively. These factors are as follows:

a. **Slant Range**. Most experienced shooters know that when shooting up or down hill you must aim low or decrease the elevation sight setting in order to hit the target. This is due to a factor known as slant range. True range is the direct straight-line distance from the shooter to the target. Slant range is the distance from the shooter to the target in which gravity affects the round. Slant range will always be less than true range. There are several methods to determine slant range to a target. Once the slant range is determined the appropriate sight setting is placed on the sight.

(1) **Mathematically**. First the angle to the target must be determined. An issued map protractor, with a string in the center hole with a small weight attached to the loose end, can be used to do this. The sniper looks down the edge of the protractor at the target and allows the string to dangle along side the degree scale. This will give the angle. Using a calculator

the sniper determines the cosine of the degree of the angle and multiplies it by the true range to get the slant range.

Slant angle chart showing required MOA for Amax 750 gr. 59 degrees Fahrenheit at sea level. For a rifle zeroed at 500 m under standard atmospheric conditions

Range in metres	10 degrees	20 degrees	30 degrees	40 degrees	50 degrees
500	-.25	-.75	-1.8	-3.25	-5
600	3	2.25	1	-.75	-3
700	6.25	5.25	3.75	1.75	-.75
800	9.75	8.75	7	4.5	1.5
900	13.5	12.25	10	7.5	4
10000	17.5	16	13.75	10.5	6.5
1100	21.75	20.25	17.5	14	9.5
1200	26.5	24.5	21.5	17.5	12.5
1300	31.25	29.25	26	21.25	15.5
1400	36.5	34	30.25	25.25	19
1500	42	39.5	35.25	29.5	22.5
1600	48	45.25	40.5	34.25	26.5
1700	54.5	51.5	46.25	39.25	30.75
1800	61.5	58	52.25	44.5	35.25
1900	68.75	65	58.75	50.5	40
2000	76.75	72.5	65.75	56.5	45.25

Figure 4-18: Slant Angle Chart

(2) **Vector LRF/GPS**. Using the Vector LRF binoculars with the PLGR, the slant range can easily be determined. By pressing both buttons on the Vector LRF and accessing the sight edit menu, the slant range will be displayed.

(3) **Rough Method**. This method is not precise and should only be used when time is not available to use other methods:

(a) for a 30º angle multiply your true range sight setting by 0.9; and

(b) for a 45º angle multiply your true range sight setting by 0.7.

(4) **Slant Range Chart**. The chart at Figure 4-xx can be used as a guide to set the sight correctly for slant range:

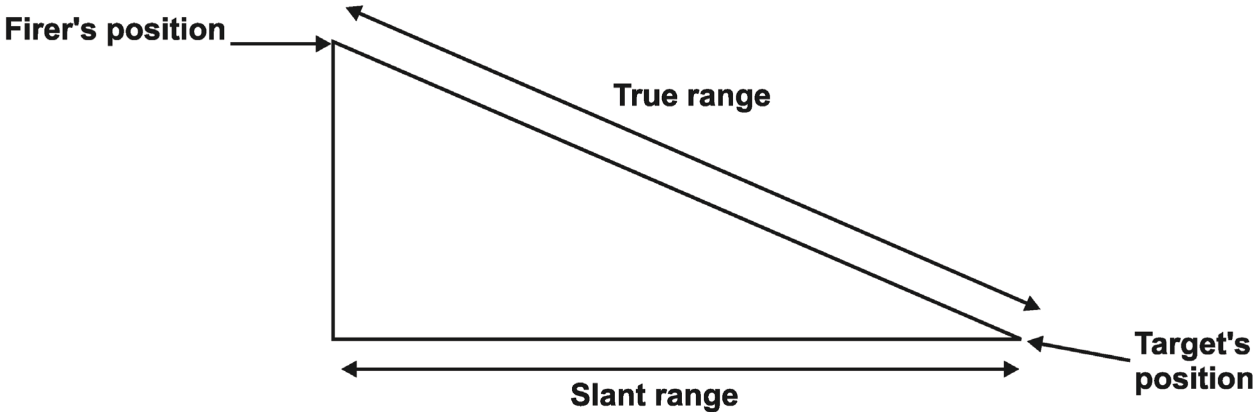


Figure 4-19: Slant Range Chart

b. **Barometric Pressure**. Barometric pressure (BP) is the same as atmospheric pressure. A general rule is the higher the elevation the sniper is at the lower the BP. The higher the BP, more pressure is placed on the bullet, causing it to slow down. The general rule for shooting is BP up sights up. The sniper must record the effects of BP in his shooting record in order to be familiar with its effect on shooting. BP can be measured with hand held devices or through information from weather stations. A point to note is that the effects of BP pertain to true range, not slant range.

c. **Air Temperature**. At long ranges, air temperature has a considerable effect on trajectory. The colder the air, the more it will slow down a bullet. This will affect windage and elevation to be placed on the sight. Referring to the windage charts for the AMAX round, one will see that at 1600 m at –10º C, the elevation sight setting is 50.75 MOA. At +10º C it is 49.5 MOA. This is a difference of 1.25 MOA or 50 cm. The sniper must note air temperature and its effects on trajectory in his shooting record book. This information plus the information given on wind charts must be considered. An important point to note is that air temperature pertains to true range, not slant range.

d. **Ammunition Temperature**. The colder the powder and primer of a bullet is, the slower it burns. This causes a lower muzzle velocity and thus a lower trajectory. Ammunition temperature can be determined by placing a thermometer in the container that holds your ammunition. However it is not uncommon for ammunition to be the same temperature as the air temperature. The following is a guide to adjusting elevation sight setting based on ammunition temperature.

ELEVATION CORRECTIONS FOR AMMUNITION TEMP BASED ON A RIFLE ZEROED AT 70ºF/21ºC

Temperature in ºF	0	10	20	30	40	50	60	70	80	90	100
Temperature in ºC	-18	-12	-7	1	7	10	15	21	26	32	38
Correction in MOA	+1.75	+1.75	+1.5	+1.5	+1	+.75	+.5	0	-5	-1.25	-2

e. **Spin Drift**. When a bullet is fired the lands and grooves cause the bullet to leave the barrel at very high revolutions per minute. For a rifle with a right hand twist, the bullet will drift to the right. This is known as spin drift. When firing at normal ranges, this effect is minimal. However, when firing at long ranges, the sniper must take spin drift into consideration. Spin drift pertains to true range, not slant range. The following is a guide to applying spin drift to the windage sight setting.

WINDAGE SIGHT CORRECTIONS FOR SPIN DRIFT (CORRECTIONS ARE TO THE LEFT TO ADJUST FOR DRIFT TO THE RIGHT)

True Range	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
Corrections in MOA	.25	.25	.25	.25	.50	.50	.50	.75	.75	1.0	1.25	1.5	1.75	1.75	2.0	2.25

SECTION 8
OBSERVER TRAINING

INTRODUCTION

87. The relative skill of the observer can mean the difference between success and failure on a sniping mission. At longer ranges (300 m and more) the sniper depends heavily on the observer for vital information regarding the target and conditions. Observer training is extremely vital and should be carried out as an integral part of sniper marksmanship training on all ranges (conventional and field).

TARGET INDICATION

88. Usually the observer will spot a target first as he will be scanning with binoculars. When a target is seen the observer gives the indication, as in the following example: **TARGET 750, REFERENCE LONE TREE, GO RIGHT 40 MILS, SHRUB, SENTRY AT RIGHT EDGE.**

89. Once the sniper reports **SEEN**, he determines the range to the target. Note that, although the sniper will take the range given by the observer into consideration, the final decision on range is made by the sniper.

90. When the sniper is ready to engage, he confirms that the observer is ready to watch the fall of shot before firing.

CALLING THE SHOTS

91. The most important task of the observer is to accurately tell the sniper where he is shooting. First round hits are expected of a sniper, however in the event of a miss a good observer can give a correction that will make a second round hit almost certain.

92. There are four ways to see the point of impact, as follows:

a. **Swirl**. As a bullet passes through the air it causes a disturbance along the path much as a boat does as it moves through the water. This swirl is often visible and looks like small waves along the path of the bullet flight. The distance between the swirl and where the bullet hits will increase with the range to the target. Swirl is most readily seen using the spotting telescope and focusing the telescope about 100 m short of the target. Due to the bullet trajectory the swirl location increases or is affected by the range to the target, atmospheric conditions, and height above sea level. The observer must know where to look for swirl at any given range. Being able to use swirl as an indication comes only with much practice:

(1) **Aid to Observing Swirl**. This is best done with the observer using optics that incorporate a mil dot reticle pattern. Knowing that the center of mass is the point of aim used by the sniper, the spotter can adjust up the appropriate number of mils in order the round as it passes through the air at the height of its trajectory. If the observer notes that the culminating point is higher or lower than it should be, he uses this information to adjust the snipers next shot.

RANGE IN METRES	MILS	RANGE IN METRES	MILS	RANGE IN METRES	MILS	RANGE IN METRES	MILS
900 m	10.5	775 m	7	675 m	5.5	575 m	4
875 m	10.5	750 m	7	650 m	5	550 m	3
850 m	9.5	725 m	6.5	625 m	4	525 m	2.5
825 m	8.5	700 m	6	600 m	4	500 m	2
800 m	8						

(2) The above principle is easy to understand and apply, however, the spotter must take light conditions and wind into consideration, which will also affect his ability to call and indicate the fall of shot accurately. The above information is based on the ammunition currently used (0150, CTG 7.62 mm Match Ball) with the observer lying prone beside the firer.

b. **Splash**. The “splash” the round makes as it hits can usually be seen. It may be a piece of bark flying off a tree or earth kicked up when the bullet hits the ground. This splash is an excellent indication of the fall of shot. One disadvantage to this way of indication is that depth perception can hinder the observer determining distance between the target and the strike of the round. The observer must use swirl and splash in conjunction with each other.

c. **Strike**. The “strike” is the effect of the round hitting a solid surface, which gives a definite indication of the target effect, e.g. when shooting on a conventional range using hand held figure targets. When the round strikes the centre of the target it sends slivers of wood flying behind. Another example is when field firing using steel targets, where the strike of the round not only chips off any fresh paint but also leaves an identifiable mark in the metal target. By using the Mil dot reticle in the spotting scope, the observer can measure the distance from the strike to the desired point of impact and give corrections to the sniper.

d. **Tracer**. Tracer rounds have a phosphorus compound located in the trailing end of the bullet which when fired gives off a red glow. This allows the observer to follow the flight of the bullet. Some of the disadvantages of tracer ammunition are as follows:

(1) **Difference in Mean Point of Impact (MPI)**. Tracer ammunition is not ballistically balanced to sniper match ammunition. Tracer ammunition normally fires higher than service issued 7.62 mm ball ammunition.

(2) **Compromise**. In operations the use of tracer ammunition will quickly give your position away to the enemy. Therefore the use of tracer ammunition should be minimized if not completely restricted.

NIGHT VISION DEVICES AS AIDS TO OBSERVATION

93. The modern battlefield is not confined to daytime operations. Our doctrine calls for hitting the enemy when our strengths are at their greatest and when the enemy is at his weakest. Most recent CF operations have been in areas where we have been technologically matched or have had better night vision devices than other belligerents. It makes perfect tactical sense to hit the enemy at night if we have the ability to do so. However, **<u>never</u> assume that the enemy does not have night vision capability**!

94. In our arsenal we have a number of devices to aid night shooting and observation:

a. **AN/PVS 14**. Lightweight, multi-use device that came into service as an add-on to the Vector LRF for night use. It comes with a head harness for use as a stand-alone device. Using a coupling device, it can also be mounted to a rifle scope to provide night vision. It is probably the most versatile device in our night vision inventory.

b. **Vector LRF**. An excellent laser rangefinder that has greatly improved our efficiency as snipers. It can be slaved to the GPS and fitted with a PVS 14. The quality of the glass is such that it can be used with the bipod to spot fall of shot.

c. **PEQ 4 IR Laser Aiming Device**. Normally seen in use overseas, this device is fitted to the C7 to provide a soldier wearing night vision the ability to point and shoot. Attached to the spotter's weapon, it can be used to mark a target for the sniper to engage. **It is however an active IR source and can be viewed by the enemy**!

d. **KITE SIGHT**. Fitted to the C7, this sight provides true night shooting capability. If the C7 is fitted with a bipod, the sight will balance well and allow for accurate shooting.

e. **MIRABEL**. The MIRABEL sight with thermal attachment for the ERYX can be used to spot fall of shot. It is suited to the task in that the splash of a round is visible for 15 seconds or more due to its passage through and heating of the material struck. The thermal device can also be used to scan for targets that can be subsequently identified by the sniper.

f. **SIMRAD**. This device has been in CF use for a number of years and has proven to be effective for night shooting.

95. It is next to impossible to spot fall of shot at night. Only thermal imagery will allow a spotter to see the splash created by a shot. The effective ranges of sniper weapons systems are greatly reduced during night operations. The need for the sniper to apply correct elevation and deflection settings to the scope during night operations is crucial due to the fleeting nature of targets and problems with visibility. Mission planning must take into account the need for closer proximity to targets and allow for greater flexibility in equipment requirements.

CHAPTER 5
SNIPER BATTLECRAFT TRAINING

SECTION 1
INTRODUCTION

GENERAL

1. A sniper who is not a master of all aspects of field training will almost certainly be an early casualty in operations. To survive on the battlefield a sniper must have many skills. For example, the sniper must be an expert at navigation, must be able to observe and engage the enemy without being seen, and must be able to move into a fire position and withdraw undetected. He must develop all of these basic infantry skills to a high degree of perfection.

2. The sniper must develop and maintain the following skills:

   a. marksmanship;

   b. navigation;

   c. observation;

   d. judging distance;

   e. camouflage and concealment;

   f. tactical tracking; and

   g. stalking.

3. In addition the sniper should remain current in doctrine, equipment and sniper continuation training.

SECTION 2
JUDGING DISTANCES

INTRODUCTION

4. Being able to accurately estimate the range from the firing position to the target is critical to the sniper accomplishing his mission. It is a key skill because any shooting skill the sniper may have will be negated if he cannot correctly estimate distance to the target.

METHODS OF JUDGING DISTANCE

5. **Unit of Measure Method**. To use this method, the sniper must be able to visualize a distance of 100 m on the ground. For ranges up to 500 m, he determines the number of 100 m increments between the two points he wishes to measure (see Figure 5-1). Beyond 500 m, this method is not reliable. Factors affecting this technique are:

a. **Effect of Sloping Terrain**. Ground which slopes upwards gives the illusion of lesser distance, and observers tend to underestimate a 100 m increment. That is, they may select two points as being 100 m apart when they are 125 m apart. Conversely, ground sloping downward gives an illusion of greater than actual distance, and the observer tends to overestimate. For example, the sniper applies a 100 m unit of measurement between two points which are actually 80 m apart.

b. **Attaining Proficiency**. With practice, the sniper will become expert at estimating range with the unit of measure method. He must measure off several 100 m courses, each at different times, and determine the average number of paces which he requires to cover 100 m on various terrain. He can then practice estimation by walking over unmeasured terrain, counting paces, and marking off 100 m increments. Looking back over his trail, he can study the appearance of the successive increments. Conversely, he can estimate distance to a given point, walk to it, counting paces, and thus check his accuracy.

c. **Limitations**. The greatest limitation of the unit of measure method is that accuracy is directly related to how much of the terrain is visible to the observer. This is particularly important in estimating long ranges. If a target appears at a range of 100 m or more and the observer can only see a portion of the ground between himself and the target, the 100 m unit of measure method of range determination cannot be used with any degree of accuracy.

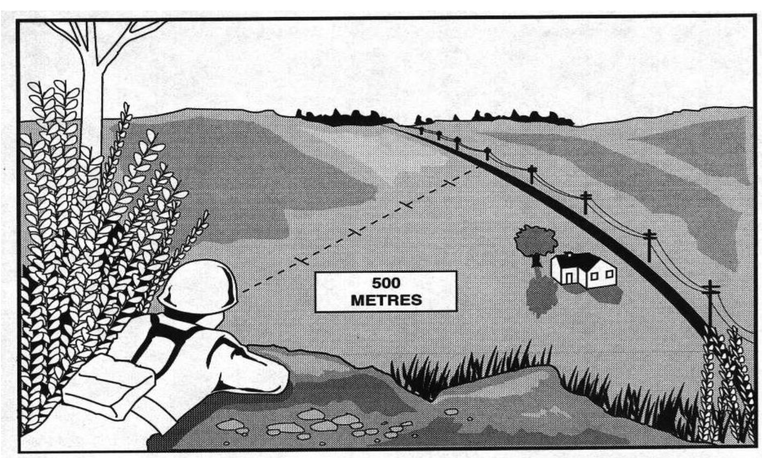


Figure 5-1: Unit of Measure Method

6. **Appearance Method**. The appearance method is a means of determining range by the size and other characteristic details of some object. This technique can be used by snipers to

determine ranges. Aware of the sizes and details of personnel and equipment at known ranges, the sniper can compare these characteristics to similar objects at unknown distances and thus estimate the range. Factors affecting this technique are:

a. **Attaining Proficiency**. To use the appearance method with any degree of accuracy, the sniper must be thoroughly familiar with the characteristic details of objects as they appear at various ranges. The following is a rough guide to the appearance of personnel at each range:

(1) at 200 m, clear in detail, i.e. colour of skin, equipment, etc.;

(2) at 300 m, clear body outline, face colour good, other details blurred;

(3) at 400 m, body outline clear, face colour not seen, detail is blurred;

(4) at 500 m, body begins to taper, head becomes indistinct; and

(5) at, 600 m body now wedge shaped, no head apparent.

b. **Limitations**. Since the successful use of this method depends upon visibility, anything which limits visibility, such as weather, smoke or darkness, will also limit the effectiveness of this method. The chart at Figure 5-2 is a good guide to help reduce the inherent inaccuracy of this method.

SERIAL	**Factors To Be Considered In Determining Range By Eye**	**Objects Appear Nearer Than They Really Are**	**Objects Appear More Distant Than They Really Are**
(a)	**(b)**	**(c)**	**(d)**
1	Target clarity in outline and details.	a. When most of the target is visible.	a. When only a small part of the target may be seen or is small in relation to its surroundings.
		b. Clearly defined objects with regular outline, e.g. house.	b. Objects irregular in outline, e.g. clump of bushes.
2	Nature of the terrain or position of the observer.	a. When looking across a depression most of which is hidden from view.	a. When looking across a depression all of which is visible.
		b. When looking upward from low ground.	b. When looking from high toward low ground.
		c. When looking down a straight open road or along a railroad track.	c. When field of vision is narrowly confined as in twisted streets, draws or forest trails.

SERIAL	Factors To Be Considered In Determining Range By Eye	Objects Appear Nearer Than They Really Are	Objects Appear More Distant Than They Really Are
3	Light and atmosphere.	a. When looking over uniform surfaces like water, snow, desert, or grain fields. In bright light or when the sun is shining from behind the observer.	a. In poor light such as dawn and dusk, in rain, snow or fog, or when the sun is in he observer's eyes.
		b. When the target is in sharp contrast with the background or is silhouetted by reason of size, shape or colour. When seen in the clear atmosphere of high altitudes.	b. When the target blends into the background or terrain.
		c. Position of sun.	

Figure 5-2: Factors Affecting the Appearance of Objects

7. **Combination of Methods**. Under good conditions, either the unit of measure method or the appearance method is an effective way of determining range; however, good conditions rarely exist on the battlefield. Consequently, the sniper will be required to use a combination of both methods. Terrain can limit the accuracy of the unit of measure method and visibility can limit the appearance method. For example, an observer may not be able to see all of the terrain between him and the target, but he may see enough to get a fair idea of the distance. A slight haze may obscure many of the target details, but the observer can still make some judgement of its size. Thus, by carefully considering the results of both methods, an experienced observer should arrive at a figure close to the true range.

8. **Aids to judging distance are**:

   a. **Bracketing**. The sniper assumes that the target is no more than “X” m but no less than “Y” m away; he adds the two distances together, divides by two, and uses this average as the estimated range. The bracket width should increase with target distance.

   b. **Averaging**. Snipers can increase the accuracy of range estimation by eye by using an average of their individual range estimate without peer influence prior to averaging.

   c. **Halving**. The sniper selects a point on the ground which appears to be about one half the distance to the target. Then using one of the methods previously discussed, he estimates the distance to the halfway point. Once confident of his estimate the sniper doubles the estimated distance to get the range to the target. This technique is useful for judging distance to targets at ranges in excess of 500 m but not more than 1000 m.

d. **Key Ranges**. Once the sniper knows the actual distance to any point within his field of view, he can accurately estimate the distance to other objects from the known point.

9. **Maps, Anaglyphs, Air Photographs and Satellite Resources**:

a. When available, recent maps, anaglyphs, air photographs and satellite resources are an asset for determining range. Competence with these resources and map reading is as important to the sniper as is familiarity with his rifle.

b. The 1:50,000 map, however, is only accurate in determining ranges to 100 m. The sniper is required to be accurate to plus or minus 5% of the actual range to assure a first round hit out to 1000 m. The map and air photograph should be used in conjunction with other methods and aids in determining range.

10. **Worm Rule Method**:

a. The sniper can use the horizontal and vertical scales in the service issue binoculars, C79 telescope and the Mil dot reticle to aid in judging distance. Use of the scale is based on the fact that one mil subtends one metre at 1000 m. The sniper can use this information to judge the distance to a target if he knows the dimension of the target or of another object in the vicinity. For instance if a man (almost two metres high) occupies five mils on the scale, he must be 400 m away;

b. the formula is as follows:

$$\frac{\text{height or width of object in m x 1000}}{\text{no of mils in scale}} = \text{range to target}$$

$$\text{i.e. } \frac{\text{2 m x 1000}}{\text{5 mils}}$$

$$= \frac{2000}{5}$$

$$= \text{400 m}$$

c. The worm rule formula has two main limitations:

(1) At long ranges, measurements must be precise to ¼ mil or a miss may result.

(2) The formula depends entirely on the ability to estimate the actual heights of targets in metres. The following may be used as a rough guide if actual measurements are not known, but snipers must compile their own lists:

(a) average man's height 1.8 m;

(b) average rifle 1 m;

(c) height of man's head .25 m;

(d) average width of a helmet .25 m;

(e) average width of tank 4 m; and

(f) average length of tank 7 m.

11. **Pacing**. Pacing the distance between two points is a method that can be used, provided the enemy is not in the vicinity. It provides the sniper with an accurate distance to a key range. This method is seldom used because it exposes the sniper unnecessarily to enemy observation and fire.

12. **Measure Distance Using the Vector Laser Range Finding Binoculars**. Laser range finders are the most accurate method of determining range to a target, however the sniper will not necessarily have access to the Vector binoculars for each operation. Use of the Vector binoculars is detailed in Vector *Operator's Manual* .

13. **GPS**. Service issue GPS are an excellent method of determining exact ranges to specific points on the ground or likely target areas. This device should be used during the completion of range cards and field sketches to ensure accuracy.

SECTION 3
OBSERVATION

SNIPER QUALITIES

14. In most circumstances during combat the actual movement of individuals will rarely be seen. In these instances the sniper must take notice of the smallest things, such as a window now open that was previously closed, disturbed wildlife, a puff of smoke, the smell of food or fires, and signs of fresh spoil. A sniper must use his senses much as a wild animal does. He must become so familiar with the ground in front of him that if any feature shows a change for no apparent reason his suspicions are at once aroused, and he will not be content until he has determined the reason for the change. The change may prove to be a carefully concealed and cunningly camouflaged enemy post. Mental alertness and attention to detail are vitally important to the sniper.

PURPOSE OF OBSERVATION

15. The purpose of observation is to gather facts and provide information for specific use. Snipers are trained reconnaissance patrolmen who, through advanced observation training for sniper operations, are able to gather detailed intelligence data on enemy troops, equipment, vehicles, and locations. The commander to plan both offensive and defensive engagements uses this information.

OBSERVATION EXERCISES

16. For a sniper to improve his observation skills he must practise and conduct observation exercises. Kim's games and observation exercises are two ways to do this. The conduct of these exercises is outlined in Chapter 6.

OBSERVATION POSITION

17. The sniper, having decided upon an area of observation, must choose a specific spot from which to operate. He must not forget that a position which appears to him as an obvious or ideal location will also appear as such to the enemy. The sniper should stay away from prominent, readily identifiable objects and terrain features. The best position represents an optimum balance between maximum fields of observation and fire, and maximum concealment.

OBSERVATION PROCEDURES

18. While observing a target area, the sniper will conduct two types of searches, i.e. a hasty search and a detailed search. Remember that when searching ground scans are conducted from right to left:

a. **Hasty Search**. A hasty search is the first phase of observing a target area and is conducted by the observer immediately after the team occupies the firing position. A hasty search is quick glances with the eyes and then binoculars at specific points, terrain features, or other areas that could conceal the enemy. The area closest to the sniper position should be viewed first, because it could pose the most immediate threat. The observer then searches farther out until the entire target area has been searched. Only when the observer sees or suspects he sees a target will he use the spotting scope for a more detailed view of the target area. The spotting scope should not be used to search the area because its narrow field of view takes much longer to cover an area; plus, its stronger magnification will cause eye fatigue sooner than binoculars will.

b. **Detailed Search**. After a hasty search has been completed, the observer conducts a detailed search of the area. A detailed search is a more thorough search of the target area, covering 3200 mils arcs or sweeps, 50 m in depth, overlapping each previous sweep at least 10 m to ensure the entire area has been observed. Like the hasty search, the observer begins by searching the area closest to the snipers' position. Even while searching in this manner, the eyes should still be focused on specific points. In this way movement will be seen more easily and the sniper will become more familiar with the terrain.

MAINTAINING OBSERVATION

19. After completing the detailed search and range card, the sniper must continue to keep the area under observation. To do this, he should use a method similar to his hasty search but

examine specific features in a sequence. This will ensure that all features are covered. A detailed search should be repeated periodically. As snipers will almost always work in pairs they take turns maintaining observation in order to reduce eye fatigue.

OBSERVING AT NIGHT

20. **Night Adaptation**. It takes the eye about 30 minutes to adapt itself to darkness. When a sniper must move to a place of observation at night he must give his eyes at least this much time to adapt before he can commence his move.

21. **Off Centre Vision**. Off centre vision is the technique of focusing attention on an object without looking directly at it. An object under direct gaze in dim light will blur, and appear to change shape and fade. If the eyes are focused at different points around the object and about 100 to 150 mils away from it, offset vision will provide a true picture of the object.

22. **Night Observation Aids**. The following aids to night observation will assist the sniper in locating targets:

a. **Binoculars and Telescopes**. Both instruments have some light gathering capability and will increase the range of observation.

b. **Image Intensification Devices**. These devices greatly assist night observation and can extend the range of the sniper to the limit of night visibility.

c. **Thermal Imaging Devices**. These devices allow the sniper to detect any heat source along the line of sight and require no ambient light to operate effectively.

d. **Illumination**. Artillery and mortar flares, searchlights, or even enemy campfires can aid the sniper.

23. **Factors Affecting Night Vision**. Night vision can be impaired by the following:

a. lack of vitamin A;

b. colds, fatigue, prescription drugs, headaches, smoking and alcohol; and

c. exposure to bright light, which necessitates re-adaptation to darkness.

24. **Twilight**. Twilight induces a false sense of security so the sniper must be extremely cautious. For the same reason, the enemy is prone to carelessness and will be more likely to expose himself:

a. This is also the time that most listening posts and observation posts (OPs) will be moving about. This is a good time to note their locations for future reference.

b. The cross hairs on a scope are visible from approximately ½ hour before sunrise until ½ hour after sunset.

INTELLIGENCE COLLECTION AND REPORTING

25. **Introduction**. Intelligence is that knowledge of the enemy, weather, and terrain which is used to plan and conduct operations. Snipers will generally be located in a position where collecting this information is possible, and must always be on the alert for such information. Aids to keeping a record are the observation log, sketches, range card, cameras, and camcorders.

26. **Observation Log**. The observation log is a factual chronological record of the sniper's deployment. It provides information to intelligence personnel, unit commanders, and other snipers. The observation log will include the following data:

a. Name of observer.

b. Tour of duty (time and date).

c. Grid location of operation or hide.

d. Visibility.

e. Sightings, in chronological order.

f. Time of observation.

g. Bearings.

h. Event or activity observed.

i. Action taken.

j. The sniper log will always be used in conjunction with a range card. This helps to serve as a pictorial reference to the written log. If the sniper is relieved in place, a new sniper pair can easily locate earlier sightings using these two documents as references. Sketches may also be used to further enhance information gathering.

k. Information should be as accurate as possible so that it can be used by others. Opinions or deductions of the sniper may also be of value, but should be indicated as such on the log.

l. An example of an observation log is shown in Figure 5-5.

27. **Sketching**. A sketch used in conjunction with an observation log is a great aid in reporting intelligence. These are particularly useful during patrol debriefs. For example, if a bridge is simply indicated on a range card with a standard military symbol, a separate sketch of the bridge would provide far more intelligence about it than the sniper could possibly remember (see Figure 5-3). All snipers must be able to make sketches and should practise this skill as part of their training. Principles of sketching are contained in CFP 318(8) *Maps, Field Sketching and Compasses*.

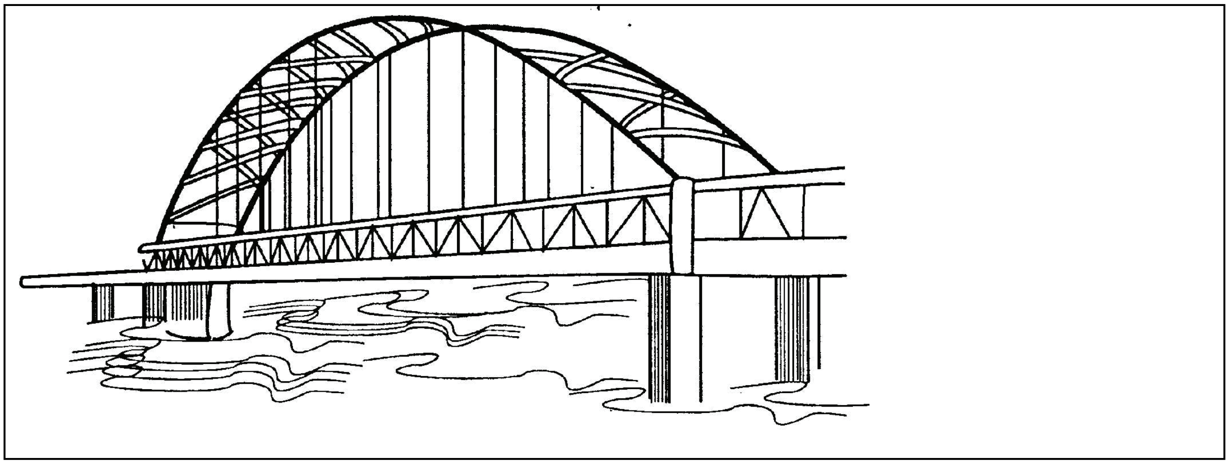


Figure 5-3: Example of a Typical Field Sketch

28. **Range Card**:

a. The range card represents the target area, drawn as seen from the sniper's point of view, with annotations indicating distances throughout the target area (see Figure 5-4). The range card, since it has pre-printed range rings on it, gives the sniper a quick range reference and a means to record target locations. A field expedient range card can be prepared on any paper the team has available. The sniper position and distances to prominent objects and terrain features will be drawn on the card. There is not a set maximum range on either range card because the sniper may also label any indirect fire targets in his area.

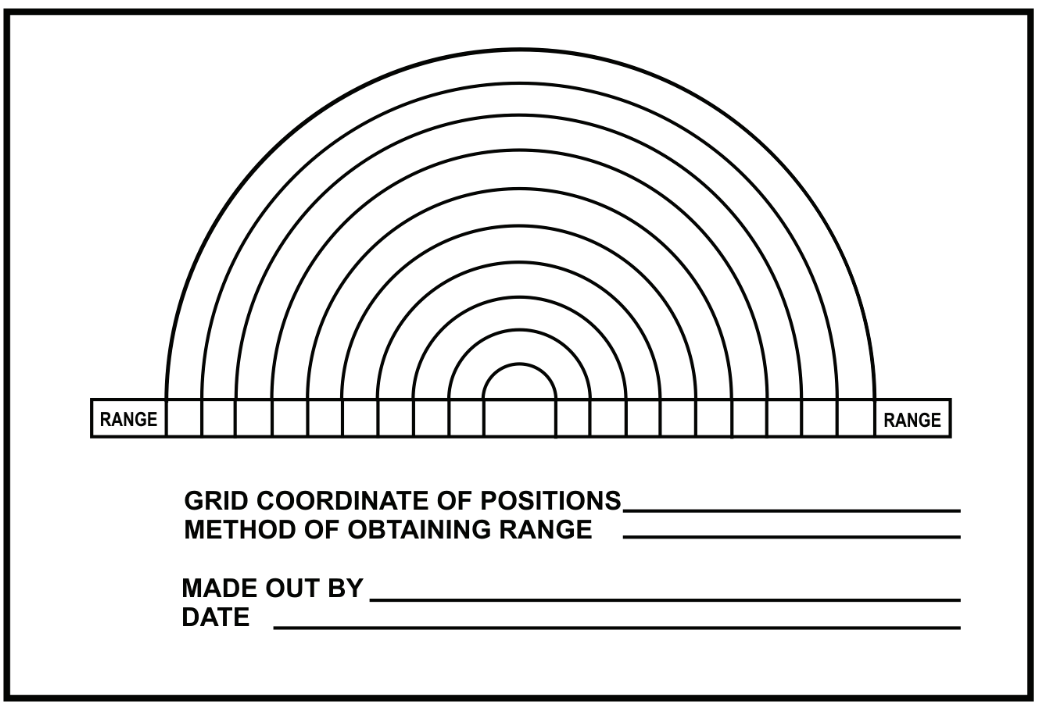


Figure 5-4: Sniper's Range Card

b. Information contained on range cards includes:

(1) name, and method of obtaining range;

(2) left and right arcs of observation with bearings;

(3) major terrain features, roads and structures;

(4) ranges, and elevation needed for various target areas;

(5) weather conditions when made out;

(6) indirect fire co-ordinates;

(7) date and time made; and

(8) grid references.

OBSERVER'S LOG				
Name of Observers		**Tour of Duty**	**Date/Position**	**Visibility**
John Tremblay, MCpl Paul Lenox, Pte		**0800-1830**	**12 May; No 2 Post 373641**	**Moderate**
Serial	**Time**	**Grid Reference**	**Object Seen**	**Remarks on Actions Taken**
1	0905	GR 384655	Bunker at X roads seen to be unoccupied.	
2	0930-0936	GR 389661	Own artillery shelling road.	30 rds fired 27 on target.
3	1020	GR 379682	Enemy wire observed south of Big Wood.	Triple Concertina. Bearing 200 mils.
4	1415	GR 388649	Enemy OP suspected in Red Barn.	Reported to Bn by Radio.
5	1505	GR 382647	Two enemy observers spotted in hedge.	Range 300. Fired two shots at 1645 hrs. One hit claimed.
6	1620-1625	GR 388649	Own artillery shelling Red Barn.	Three direct hits, two enemy ran out.
7	1710	GR 377647	Enemy MG post located under large bush.	

Figure 5-5: Sniper Observation Log

29. **Report Formats**. Field reports formats that the sniper may need are described in B-GL-309-003/FT-001, *Section and Platoon in Battle.* They include:

a. location state (LOCSTATE);

b. situation report (SITREP); and

c. shelling, mortar, bombing or NBC reports (SHELREP, MORTREP, BOMREP, NBC1).

SECTION 4
SNIPER CAMOUFLAGE AND CONCEALMENT

GENERAL

30. One of the sniper's most valuable skills is the art of camouflage. Camouflage consists of the measures the sniper takes to conceal himself, his equipment, and his position from enemy observation. Due to his limited (by volume) firepower and small operational units (pairs), he must perfect his ability to conceal his presence in any environment.

CAMOUFLAGE

31. **General**. Camouflage of the sniper and his equipment is essential but camouflage must not interfere with the sniper's task. Shiny parts can be eliminated by covering or dulling them, and shapes are best distorted by loose fitting clothes. Colours that achieve the best results are a combination of neutral greys, greens and browns.

32. **Natural Camouflage**. Natural camouflage is vegetation or materials that are native to the given area. The sniper should, when possible, augment his appearance by using natural camouflage.

33. **Artificial Camouflage**. Artificial camouflage is any material or substance that is produced for the purpose of colouring or covering something in order to conceal it.

34. **Camouflage Stick and Face Paint**. Camouflage stick or face paints are used to cover all exposed areas of skin, such as face, hands, and the back of the neck. The parts of the face that form shadows should be lightened and the parts that shine should be darkened.

CLOTHING

35. The sniper must whenever possible blend with other soldiers. The smock although designed for sniper operations is relatively the same pattern and design as standard issue clothing. The pockets are specifically designed to assist the sniper in keeping all operational equipment close at hand and easily accessible. The built in hydration system will allow the sniper to remain in position for extended periods and minimize movement. The shoulder pads are designed to be interchangeable, allowing either pad to be removed and/or doubled up when firing the LRSW.

36. **Ghillie Suit**. The ghillie suit was developed from the camouflage suits worn by gamekeepers and hunting guides in Scotland, called ghillies, who used this technique to count game and watch for poachers. The ghillie suit is a camouflage outer smock with irregular patterns of scrim or netting attached to it. Regular combats or a one piece garment such as tanker overalls can be used as a base for ghillie suit construction. A larger than normal size suit is preferred. General purpose netting is attached to the base garment along the neck and back, to include the arms and the legs. This netting can be attached by sewing, tying, or glue. Strips of

scrim are attached to the netting and frayed lengthways, with some strips left whole to add texture and resemble vegetation. The purpose of the ghillie suit is to assist the sniper to blend into the surrounding area. It is not a substitute for good movement, a well planned route, or natural vegetation:

a. The suit can also incorporate close mesh netting sewn to the back of a hat such as a combat cap or toque. When draped over the head, the veil should come down to the belt and have camouflaged scrim tied on in order to break up the outline of the head and the solid features of the net. The veil is also placed over the rifle and scope when in position to eliminate scope glare and conceal bolt operation.

b. The ghillie suit should also have natural vegetation attached to it along with the artificial scrim. Small loops are sewn to the suit to hold the vegetation. The natural vegetation must be changed as the sniper moves into different areas, and as vegetation dries out it must be replaced. Nothing blends as well as fresh, natural vegetation that matches the vegetation in the area of operation.

c. Remember that the ghillie suit does not make one invisible. A sniper must still take advantage of all available cover. Wearing the ghillie suit around regular soldiers will reveal the sniper's speciality, so the ghillie suit should only be worn while on operations.

d. The following items are recommended to the sniper to construct the ghillie suit:

(1) issued sniper smock;

(2) issued sniper pants;

(3) issued sniper hat;

(4) 2 m x 2 m netting (with approximately 1.25 cm x 1.25 cm square holes);

(5) 10 m hemp rope;

(6) 15 m roll of each of the seven colours of hessian; and

(7) 15 m roll of white material.

EQUIPMENT

37. **Camouflage sniper equipment as follows**:

a. **Rifle**. The sniper has to be careful camouflaging the rifle so that its operation is not interfered with, the scope is clear, and nothing is applying pressure on the barrel. Netting may be attached to the stock, scope, and sling. Scrim can then be attached to the netting to break up the outline. Should the sniper camouflage the barrel he must do so prior to zeroing.

b. **Optical Gear**. Optical gear such as the spotting scope and binoculars are camouflaged in the same way. Netting is attached and scrim tied on to break up the outline. In bright light conditions such as desert and snow, tape may be placed across the objective lenses, leaving a 25 mm x 12.5 mm slot to see through. Shielding may be taped over the optics lens to ensure the glass does not reflect light.

c. **Packs and Drag Bag**. Gear may be dyed, or have netting tied to it to camouflage it. Scrim is tied to the net to break up the outline. The drag bag (see Figure 5-6) can be camouflaged by tying a scrim net to it and securing it so that it does not hang loose. Be aware netting used for camouflage might snag on trees or other objects. Netting should thus be kept to a minimum and not allowed to hang loose.

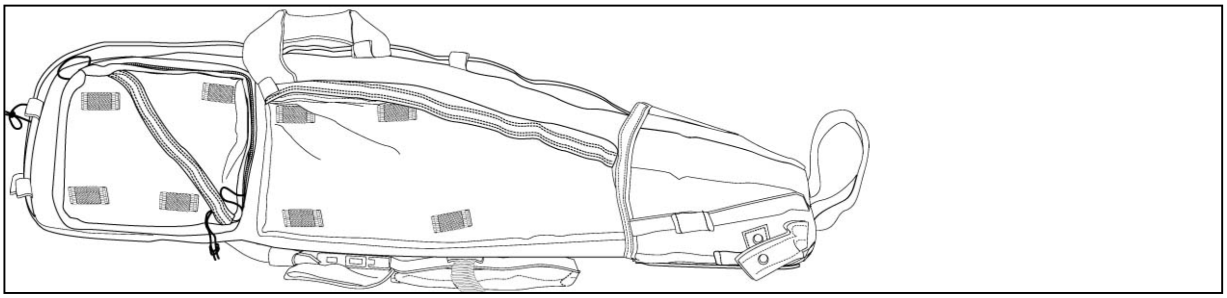


Figure 5-6: Drag Bag

CAMOUFLAGE DURING MOVEMENT

38. **Hiding**. Hiding is completely concealing the body from observation by lying in very thick vegetation, under leaves, etc., to keep from being seen. The technique of hiding may be used if the sniper stumbles upon an enemy patrol and immediate concealment is needed, or if the sniper wishes to "lay low" during daylight hours to await darkness.

39. **Blending**. Often, it is not practical or possible for a sniper to completely hide himself. The sniper must then camouflage in such a way as to blend into the surroundings. He must ensure he cannot be detected even under close scrutiny through optical gear. Accurate blending with the environment takes much practice and experience on the part of the sniper.

CAMOUFLAGE FOR VARIOUS GEOGRAPHICAL AREAS

40. One type of camouflage cannot be used in all types of terrain and geographic areas. Before operations in an area, a sniper should study the terrain, vegetation, and lay of the land to determine the best possible type of personal camouflage:

a. In areas with heavy snow or in wooded areas with snow covered brush, a full white camouflage suit, grey shading, can be used. With snow on the ground and the brush not covered, white trousers and green brown tops are worn. A hood or veil in snow areas is very effective, and equipment should be striped or totally

covered in white. In snow regions, visibility during a bright night is nearly as good as during the day, giving snipers full light capabilities, but movement must be undertaken along carefully concealed routes. Details may be found in B-GL-302-002/FP-001 *Specific Operations*, *Volume 2, Arctic and Sub Arctic Operations, Part 1, Basic Cold Weather Training*.

b. In sandy and desert areas, textured camouflage is normally not necessary. Still, a properly coloured suit that breaks up the sniper's outline is needed. A bulky smock of light material with a hood works well. The hands, face, and all equipment should be blended into a solid pattern that corresponds with the terrain. The sniper must make full use of the terrain by using properly selected and concealed routes of movement. Details may be found in B-GL-302-003/FP-001 *Specific Operations*, *Volume 3, Desert Operations.*

c. In urban areas, when deployed with regular soldiers in a built-up area, the sniper should be dressed identically to them. But when the sniper is in position he should be camouflaged to match the area he is in. Clothing should match rubble and debris of the urban area. Ensure the outline of the head is broken up by some type of hood. Movement during daylight hours, if absolutely necessary, should be extremely slow and careful because of the unlimited amount of possible enemy sniper positions. If the sniper is detected by the enemy he must be prepared to abandon his hide quickly.

d. In jungle areas, foliage, artificial camouflage, and camouflage paint are used in a contrasting pattern that will blend with the texture of the terrain. In a very hot and humid area, only a light camouflaged suit can be worn, since a heavy suit will cause loss of too much body fluid. The vegetation is usually very thick in jungle areas, so the sniper can rely more on using the natural foliage for concealment. Details may be found in B-GL-323-002/FP-001—Jungle Operations (B-GL-302-004/FP-001 *Specific Operations*, *Volume 4*, *Jungle Operations)*.

CONCEALMENT

41. **General**. Understanding the application of the principles of concealment, in conjunction with the proper application of camouflage, will provide protection from enemy observation.

42. Concealment is protection from enemy observation and can be natural or human-made:

a. natural concealment is provided by the surroundings, e.g. bushes, grass and shadows; and

b. artificial concealment is made from materials such as burlap or camouflage nets, or from natural materials such as bushes, leaves and grass which are moved from their original location.

PRINCIPLES OF CONCEALMENT

43. The principles of concealment are as follows:

a. Avoid unnecessary movement.

b. Blend with the background. This is important. The sniper should always attempt to blend with the background to prevent detection.

c. Stay in the shadows. In the open, a sniper stands out clearly, but in the shadows he is difficult to see. Shadows are found during day and night.

d. Stay low to the ground. The sniper should observe from a crouch, a squat, or the prone position. This presents a low silhouette, making enemy detection difficult.

e. Expose nothing that shines. Reflection of light on a shiny surface instantly attracts attention and can be seen for great distances.

f. Keep off the skyline. Figures on the skyline can be seen from a great distance, even at night, because a dark outline stands out against the lighter sky. The silhouette formed by the body makes a good target.

g. Alter familiar outlines. Military equipment and the human body are familiar outlines to the enemy. The sniper should alter or disguise these shapes.

h. Keep quiet. Noise, such as talking, can be picked up by enemy patrols or listening posts.

SECTION 5
SNIPER TACTICAL MOVEMENT AND STALKING

INTRODUCTION

44. A sniper is most vulnerable when moving. It is then that the enemy detection is more likely, since the sniper will be making best use of available cover and his own view of the surrounding area will thus be restricted. In order to make each move as secure as possible, the sniper must plan his line of advance, and move as stealthily as possible.

45. When possible the sniper moves from one place of cover to the next. There are various ways of moving but he must use the one that offers the best concealment balanced with the speed of movement necessary. The sniper must always assume that his area of movement is under observation.

METHODS OF MOVEMENT

46. Various methods of movement with weapons are covered in B-GL-318-001/PT-001, *Fieldcraft*. The most important methods are the stomach crawl, the monkey run, the leopard crawl, and the walk. Snipers should avoid using the roll as this may affect the alignment of the telescopic sight with the rifle, and the roll also creates extra movement that may be easy to detect.

47. **Walking**. The sniper must be conscious of every step taken when walking. He must walk soundlessly, slowly, and deliberately. To this end he must:

a. Walk at a crouch to maintain a low profile with shadows and bushes. Most enemy will be looking for an upright man.

b. Cautiously lift one foot and move it forward, clearing obstacles with the toes straight to the front.

c. Pick out a point about one half of a normal stride, preferably free of dry leaves and twigs, and place the toes or outside edge of the foot down lightly to get a feel for the ground. Slowly rotate the remainder of the foot down, ball first, then the instep, then the heel.

d. Slowly shift the body weight forward until it is on the forward foot.

e. Balance is important. The sniper should be able to freeze at any point in the walking process for at least 10 minutes.

48. **Monkey Run**. When cover is adequate or silence is needed, the monkey run is used:

a. The rifle is held in one hand close to the chest and in line with the body. The rifle is not put on the ground. The sling is grasped with the stock to keep it from getting tangled with vegetation. The weight of the upper body is supported with the opposite arm. Arms are alternated to prevent fatigue.

b. Holding the rifle in the left hand, the sniper picks a point ahead to place the right hand. He moves the right hand slowly into position making no noise. While he is moving the right arm, the weight of the body is rested on the left elbow. Once the right arm is placed, the left arm and rifle are then moved.

c. A point is then picked to which the knees are moved. Each leg in turn is lifted to clear any obstruction and is slowly placed in its new position.

d. If absolute silence is needed, leaves, twigs, pebbles, etc. must be moved before placing the hands and knees. Breathing should be shallow and through the mouth.

49. **Stomach Crawl**. The stomach crawl is used when cover and concealment are low or scarce, and when the enemy is near or has a clear field of view to the sniper position. It is a

painfully slow movement technique virtually undetectable to the untrained eye. Every movement should be well planned and deliberate:

a. The sniper lies on the ground as flat as possible, legs together, ankles pressed to the ground, with the arms to the front and flat on the ground.

b. His head is resting on one cheek. He does not lift his head up or “turkey neck”, but must maintain observation.

c. He grasps the rifle by the upper sling swivel, laying the rifle across the forearm, butt resting on the ground on the outside of the body. The rifle can also be put along the inside of the body, under one arm, to be pushed forward as the sniper moves. He must ensure that the muzzle does not protrude in the air or stick in the dirt.

d. To move forward, he extends the arms fully, pulls one leg up, then pushes with that leg while pulling with the arms. For extremely slow movement, he pushes with the toes alone.

e. To avoid fatiguing one leg, the sniper will alternate which leg performs the pushing task.

50. **Leopard Crawl**. The leopard crawl is used when cover is more prevalent, or when speed is required:

a. The body is kept free of the ground and the body's weight is resting on the arms and lower legs. The rifle is carried as in the stomach crawl.

b. Movement is made by alternately pulling with each arm and pushing with one leg to remain fairly low. If cover permits, alternate legs may be used for pushing.

c. The sniper must be conscious not to raise head or buttocks too high. He must also be wary of his legs making noise by being dragged over brush or debris.

51. **Turning while Crawling**. If it is necessary to change direction or turn around completely while crawling, the sniper:

a. attempts to turn in defilade, since a wider target is presented to the enemy while turning;

b. keeps as low to the ground as possible;

c. eases the body in the direction of the turn as far as possible;

d. moves one leg away from the direction of the upper body and closes the other leg next to the first repeatedly to complete the turn; and

e. is always conscious of what the feet are doing, e.g. hitting bushes or flopping around in the air.

52. **Moving Backward**. The sniper may sometimes be required to withdraw without turning. This is accomplished by doing the low crawl in reverse. It is not advisable to do this for a long distance. The sniper should only move backward until he can turn around under cover.

SELECTING LINES OF ADVANCE

53. **General**. The sniper, to make certain of a kill with his first shot, must sometimes get into position in close proximity to the enemy. If he is to do this he must be an expert at using ground to reach his fire position without being seen, and to achieve this choosing a good line of advance is more than half the battle.

54. **Considerations**. Detailed study of all available maps, air photos, and patrol reports are a must. If possible the sniper should conduct visual reconnaissance and talk to personnel familiar with the area. The ideal approach would consist of cover from view and protection from fire, while at the same time providing good fire positions and observation points throughout the advance. Cover and protection are usually found in low ground, while fire and observation are normally associated with high ground. The sniper must find the best balance between the two. The position of troops in the area will have to be considered as well as the style of movement which is most suitable, e.g. walking or crawling. It will rarely be possible to choose the exact final firing position from the starting point; only its rough area and route to it need be decided. It will indeed be a rare stalk when a detailed study of all the ground can be made. Normally it is advantageous to split the advance into a series of bounds, making a detailed plan to deal with each, and noting likely locations of cover. It must be remembered that once committed to a certain line of advance, it is often impossible to discard it in favour of another. A skilful appreciation of the ground from the starting point is therefore vital.

EXECUTING THE MOVEMENT PLAN

55. From his position, the sniper chooses his bound, carefully observing the area for signs of the enemy. He then selects his route to the new position before making his move.

56. He halts at intermediate positions, listens, and observes. Any activity (birds, animals, or troops) which might betray his or an enemy's presence is noted. While halted, he plans his next bound.

57. When moving through tall grass or snow, he changes direction frequently. Straight line travel through grass or snow creates trails which are easily spotted by the trained eye. The best time to move in grass is when the wind is blowing. Movement across roads or trails is done at culverts, low spots and curves. Movement across ploughed fields is done by crawling in the furrows. If furrows must be crossed, the sniper does so at the lowest part of the field.

58. The sniper should avoid steep slopes, areas of loose stones, cleared areas, and ridge lines. He should take full advantage of distractions and loud noises such as artillery fire or passing aircraft to distract the enemy's attention and cover the sound of his movement.

59. As snipers work as a team, each usually uses the same line of advance. In this case the two snipers should remain a tactical bound apart in case one is discovered. In this way the sniper in the rear can cover the movement of the one in front. Normal infantry movement does not apply to snipers. Snipers moving in pairs in close proximity to the enemy cannot afford to be seen at any time. Their movements must be slow and deliberate. During movement, a sniper team should:

a. **Stop**. Stop regularly to evaluate the present situation and prepare for changes that could occur.

b. **Look**:

(1) observe from a covered position, staying as low to the ground as possible;

(2) blend into the background before observing;

(3) look around objects or through brush, not over them; and

(4) note everything in detail, using binoculars if necessary.

c. **Listen**:

(1) listen for anything that sounds unnatural; and

(2) listen for air as well as ground indication of enemy presence.

d. **Plan**:

(1) plan the route to the next observation point;

(2) use defilade whenever possible; and

(3) move along the most concealed routes, using alternate methods of movement when defilade is not available.

e. Upon reaching the next point, repeat the process of stop, look, listen and plan.

60. **Keeping Direction**. Keeping direction is of utmost importance. It is all too easy to arrive at what is thought to be the selected fire position to find that a similar feature, but not the one intended, has been reached. If possible two distant landmarks behind the position being stalked and in line with it should be selected and memorized. It may also be helpful to memorize a landmark behind the position from which the stalk started. Only with constant reference to those points can a stalker be sure of maintaining direction. In the absence of such landmarks, and even if they are present, a study of the position of the sun and direction of the wind should

be made, since both may be of help. The compass however remains the most valuable tool in maintaining direction.

SNIPER DETACHMENT TACTICAL MOVEMENT

61. **Contact Drills en Route**. The sniper detachment should always be able to see the enemy before they are seen. The sniper's advanced observation and concealment skills coupled with his ability to maximize the use of ground should result in snipers rarely being engaged by the enemy. However, due to their limited firepower the sniper detachment must be aware of the danger of unexpected enemy contact while en route. If engaged the detachment needs to be prepared to execute quick drills to break contact:

a. **Action on Far Enemy**. The No 2 will use the firepower of the service rifle to engage the enemy to allow the No 1 to withdraw to a position from which he can bring effective long range fire to bear to allow the No 2 to withdraw. This is repeated only until contact is broken, and then the detachment utilizes their camouflage skills to remain undetected while moving out of the danger area.

b. **Action on Near Enemy**. The detachment works together as a basic fire team using fire and movement to withdraw. After the break contact has been made the pair utilizes camouflage and movement techniques to move out of the area.

62. **Crossing Obstacles**. Obstacles should be avoided where possible but if crossing an obstacle is necessary the detachment determines from the nature of the obstacle and the enemy threat whether to cross the obstacle as a pair or individually. Regardless of which method is adopted the detachment makes a thorough reconnaissance of the obstacle and area. They select the place to cross and a rendezvous on the opposite side:.

a. **Method of Movement**. After conducting detailed observation of the area the detachment determines what method of movement will be used, i.e. stalk, walk, crawl or run;

b. **Crossing as a Detachment**. The detachment moves across the obstacle using the pre-determined method. Once in the rendezvous they check their trail and continue on the planned route; and

c. **Crossing Individually**. The No 1 with his long-range capability covers the No 2 as he moves across and into the rendezvous. Once in location the No 2 covers the No 1's movement across.

63. **Sniper Detachment Intercommunications**. The sniper detachment must develop and use simple basic hand signals to relay information to each other. The sniper should be able to instinctively know what is expected of him in any given situation. This ability comes only after much continuation training. Training in sniper detachment movement and use of hand signals should be practised during any periods of inaction.

AVOIDING DETECTION

64. It must be remembered that the enemy may be using various types of detection devices. The sniper should be aware of the type of detection device utilized by the enemy and its capabilities. This will enhance the sniper's chance of success. The following paragraphs describe enemy detection devices in general, and counter-measures which can be employed by snipers to reduce the enemy's effectiveness.

IMAGE INTENSIFIERS

65. With these devices, a sniper may not know that he is under observation.

66. When there is a possibility of image intensifiers being used, the sniper can combat them by moving in dark shadows or tree lines that obscure the enemy's vision. Moving in defilade, or through ground haze, fog, or rain, also assist the sniper in remaining undetected.

SEISMIC DETECTORS

67. Seismic detectors are monitoring devices with geophones planted in the ground along likely routes of advance to give early warning of troop or vehicle movement. These devices are triggered by vibration of the ground caused by walking or other movement. It is highly unlikely that the sniper would ever be aware of their presence.

68. The sniper can help combat the effect of seismic devices by moving at the same time as actions that would activate the devices, such as artillery fire, low flying aircraft, rain, snow or even a heavy wind.

GROUND SURVEILLANCE RADAR

69. Ground surveillance radar can detect troop or vehicle movement at extended ranges, but only in line of sight and only if the object is moving. It takes a highly trained individual to effectively monitor the device. Even then, it is not infallible.

70. Snipers can combat ground surveillance radar by moving in defilade of the equipment. Movement should be very slow and low to the ground, using natural objects and vegetation to mask movement.

THERMAL IMAGERS

71. Sensors that locate body heat may be used to detect the sniper. Even a motionless and camouflaged sniper would be located if his position were in the line of sight of the device. Loophole screens can be constructed and used effectively to reduce thermal signature, however moving in defilade is the only guaranteed method of avoiding thermal detection.

SECTION 6
TRACKING

INTRODUCTION

72. The sniper may be called upon to track and kill an enemy sniper operating in a friendly unit's area of operations. The success of such a mission will depend on the tracking ability of the sniper.

TRACKING PRELIMINARY REQUIREMENTS

73. To be successful, there are two very important traits a tracker must have: vision and memory:

a. Eyesight must be as close to 20/20 as possible. Less accurate vision is easily correctable with glasses or contacts. Colour blindness is detrimental to good tracking because detection of discolouration is necessary.

b. A tracker must be able to retain all the information he gathers until the mission is completed. He must recognize his own tracks to preclude tracking himself. He must understand the sign, called spoor, that the quarry is leaving to know if he is speeding up, slowing down, resting, or looking behind him. Recording a detailed description of the sign is an effective way to aid memory.

TRACKER TRAITS AND QUALITIES

74. With practice, knowledge, and experience the sniper can track another person. However, he must first develop the following traits and qualities:

a. be patient;

b. fitness;

c. be able to move slowly and quietly, yet steadily, while detecting and interpreting spoor;

d. avoid fast movement so that spoor is not overlooked and the trail is not lost;

e. be persistent and have the skill and desire to continue the mission even though signs are scarce, or weather or terrain is unfavourable;

f. be determined and persistent when trying to find the trail;

g. be observant and try to see things that are not obvious at first glance;

h. use senses of smell and hearing to supplement sight;

i. develop a feel for things that do not look right, as this may help to regain a lost trail or discover additional spoor; and

j. know the enemy, i.e. his habits, equipment, and capability.

TRACKING TERMINOLOGY

75. Some common terms used in tracking are:

a. **Spoor**. Spoor is a general term that describes identifiable tracks on the ground or on foliage.

b. **Follow-up**. A follow-up is the physical act of following a set of tracks on the ground made by a quarry. A single tracker or a tracking team conducts a follow-up.

c. **Tracking Team**. The tracking team is a self-contained tactical unit that provides its own security and moves in various formations according to terrain and vegetation conditions. For snipers, it may consist of a team, detachment, or section.

d. **Tracker**. The tracker is the team member who is physically looking for and following the tracks. For sniper operations the tracker is normally the No 1, however rotation of positions within the team is advisable over long follow-ups.

e. **Controller**. The controller is the person in command of the tracking team. He controls the follow-up and is responsible for its tactical movements and formations. The controller for sniper tracking operations is normally the detachment commander, however this position can be rotated.

f. **Flank Tracker/Security**. He will be positioned slightly ahead and to the flank of the tracker. He will provide security for the tracker and controller, as well as assist in searching for lost spoor.

g. **Lost Spoor Procedure**. A series of drills that are conducted to relocate tracks.

h. **Quarry**. The individual or group you are tracking.

READING SPOOR

76. **Tracking Art**. Man tracking is a precise art. It is impossible to become proficient at it without a great deal of practice over various types of terrain. The rule which must be remembered is that a visual man tracker moves from spoor to spoor, and never moves past the last spoor without knowing where the next one is. During sniper tracking operations, there may be a necessity to go beyond the last known spoor to avoid danger areas that could potentially be covered by a pursued enemy or wary enemy sniper.

77. **Reading Tracks and Spoor**. Becoming proficient at tracking may take many years of practice and experience. The sniper who has refined his tracking skills can gain important intelligence from the spoor left by the enemy. For instance, he can estimate the amount of enemy movement through a given area, the size of unit, and which areas they frequent most. If an area is found where the enemy has conducted a long halt, it may be possible to determine how well disciplined the enemy is by the security that was kept. If pieces of discarded food or ration cans containing uneaten food are found, it is fairly certain that the enemy is well fed. Likewise, the opposite will be true for an enemy with little food. Imprints in the dirt or grass can reveal the presence of crew served weapons like machine-guns, mortars, radio equipment, ammunition, or other supplies. An enemy sniper may leave valuable indicators that confirm his presence in the area, such as small pieces of hessian or artificial camouflage material on the ground or hanging from vegetation. Snail trials through open areas may indicate a sniper's undetected movement used to traverse danger areas. Distinctive bipod and elbow imprints in positions covering friendly force locations, and on rare occasions the finding of .30 calibre type empty casings around suspected fire positions, are all important indicators. By analysing these indicators and making sound assumptions based on intelligence, snipers can anticipate the enemy's next move and position themselves in a location to engage the enemy at the moment of opportunity.

78. Snipers can practice reading track and spoor in a spoor pit, studying the following indicators:

a. **Physical disabilities**:

(1) tired or physically impaired people will walk with a shorter pace and tend to drag their feet, leaving clear marks;

(2) an injury to a leg will be indicated by the good leg print being deeper and the injured leg print less distinct or twisted out of normal alignment; and

(3) a seriously wounded person may have to proceed on hands and knees, or be compelled to take frequent rests.

b. **Carrying weight**:

(1) additional weight is indicated by closely placed, deep prints, and possibly by frequent rests in shaded areas; and

(2) a person carrying weight will take the shortest and most direct route.

c. **Speed and movement**:

(1) a fast moving person will leave widely spaced, deep imprints with distinct heel marks and a scrape mark on the ground made by the toe as the foot leaves the ground;

(2) prints left by slow deliberate movement will be evenly spaced and uniformly deep, with little difference between the primary and terminal points;

(3) the primary impact mark of a person sprinting will be from the ball of the foot, with little to no heel marks left at all, and prints will be far apart; and

(4) prints of a person creeping along will be either on tip-toe or closely spaced and even.

d. **Disguising the tracks**. If a person walks backwards in an attempt to confuse a tracker, it will be obvious because the impact point will be reversed. The toe will impact first pushing the soil back. When the heel leaves the ground it will scrape sand or soil in the direction of travel. The prints of a person walking backwards will be closer together than normal and often appear to be unbalanced.

e. **Determine the size of a person**. To estimate the height (in centimetres) of the person you are following take the total measurement of the footprint in centimetres, then divide by .165. This is an estimate only. The type of footwear worn may affect this estimate.

f. **Determine the number of people**. To determine the number of people you are tracking draw a line behind the heel of the first spoor, then draw a second line 90 cm ahead of the first one in the direction of travel. Count the number of prints between the two lines and divide it by 2 to determine the number of people you are tracking.

SNIPER TRACKING OPERATIONS

79. Normally, an established four man tracking team(s) from Reconnaissance Platoon conducts tracking operations. Due to their numbers and mission they can actively locate the quarry's spoor trail, ascertain enemy numbers and disposition and, if the situation dictates, aggressively neutralize the threat in conjunction with follow-on forces. Sniper tracking operations differ somewhat than that of full establishment operations. The sniper's purpose for tracking the enemy is to provide intelligence on size, disposition and intent so that the commander can formulate a reaction plan. Snipers can also use the information to anticipate the enemy's next move and position themselves to observe and engage as ordered. In counter-sniper operations snipers may have to operate in an area dominated by an enemy sniper. In this situation overt tracking operations would not be practical. The main objective for sniper tracking operations is to locate the enemy sniper by identifying his indicators, and deduce the location of his vantage points and firing positions. This information will be forwarded to the local commander and appropriate measures can be taken. If snipers feel they have not been compromised and have retained the element of surprise, they can lay in wait overlooking the suspected enemy sniper's final fire position or other key location and engage him when he presents himself.

80. The use of snipers to track an enemy sniper as part of the counter-sniper plan should only be considered as a last resort. The enemy sniper will likely have the advantage, by operating on ground of his choosing and devising his own security plan. He will most likely anticipate dismounted operations against him and select positions which will provide him a commanding view of approaches and danger areas. Snipers should employ the use of a Quick Reaction Force

(rifle section), positioned for immediate response, to investigate suspected enemy positions, or to provide fire support to the snipers if they are engaged. Snipers should never become part of the fighting force, as this will compromise their intended mission.

81. When conducting tracking operations, care must be taken not to traverse danger areas that may present a target for a vigilant enemy. In this scenario, it would be far better to go ahead of the last know spoor, skirting the danger area and conducting lost spoor procedures along the suspected line of travel, rather than to follow the spoor trail into a kill zone.

TEAM COMPOSITION

82. Sniper pairs conducting tracking operations are configured into tracker and security/controller. The No 1 is normally the tracker and the No 2 is the security/controller. When operating as a sniper detachmant a second person may also be employed as a flank tracker/security element. All snipers must be trained as tactical trackers and as such be capable of assuming each role when required. The following are some responsibilities of the controller/security, tracker, and flank tracker/security element during sniper tracking operations:

a. **Controller/security**:

(1) tactical movement of the team;

(2) communications with headquarters and any support elements involved;

(3) maintain visual contact with the tracker and flank tracker/security if applicable;

(4) take operational decisions;

(5) mark the last known spoor when required to do so by the tracker; and

(6) carry the radio.

b. **Tracker**:

(1) follow spoor;

(2) interpret indicators;

(3) assess the enemy's probable actions; and

(4) inform the controller of his evaluations and assumptions.

c. **Flank tracker/security**:

(1) security of the tracker by protecting the flanks or the rear of the formation;

(2) scan the area of primary responsibility for ambush, obstacles, booby traps, changes in terrain, danger areas, or anything else that may affect the tracker or distract him from his task;

(3) search for lost spoor under the direction of the controller; and

(4) must be prepared to take over as tracker any time the tactical situation demands.

TEAM FORMATION

83. For sniper pair tracking operations, the basic formation will be single file. The No 1 will normally lead and conduct spoor analysis as he advances. The No 2 will be located behind the No 1 close enough to provide intimate support if required. This formation has the flexibility to allow the No 2 to take point and provide forward security if the ground and perceived threat warrants. Sniper detachment tracking operations has the advantage of having 1 or 2 snipers added to provide flank security while the tracker concentrates on analysis and follow-up. The controller will still provide rear security and command. Formations that can be adopted are:

a. **Single-file**. When the team encounters thick brush and visibility is limited, the single-file formation is used. The tracker remains on the spoor protected by the flank tracker. The controller places himself to the rear where he can provide rear security and maintain visual contact with the tracker. The flank tracker is always prepared to move to a designated flank, as directed by the controller, where ground and vegetation conditions dictate.

b. **Half-Y**. The half-Y formation is generally used on clear or lightly wooded terrain. The size of the formation depends on the visibility between the controller and the rest of the team. On clear terrain, team members can disperse over a distance of some 30 m, but as vegetation becomes denser they must close up to maintain visual contact at all times. This formation is also useful when the spoor veers away from the direction of movement, since the flank tracker can note this before the tracker reaches this point. Similarly, if the enemy's tracks suddenly change direction or break off, the flank tracker should note this first, depending on which flank he is working. The tracker can then ask the flank tracker to replace him forward, to continue following the spoor himself while he moves towards the unoccupied flank. The team accordingly wastes no time and the trackers by rotating avoid fatigue during a long follow-up.

c. **Extended Line**. This formation is adopted when the terrain is completely open, and there is no obvious threat of enemy ambush or the possibility of enemy sniper activity. It is also useful when the spoor is hard to see and all team members can track simultaneously. The ground will determine the effective frontage for the formation.

COMMUNICATION WITHIN THE TEAM

84. When conducting counter-sniper tracking operations the possibility of being compromised is high, thus it is essential that communication between members be maintained at all times. Visual contact is the mainstay for the sniper to communicate with team members, since it is silent and requires no unnecessary noise that could warn the enemy of the team's approach. Silent signals are used for transmitting information and orders. The controller frequently needs to give team instructions without doing so orally or by radio. In fact, a complete tracking operation can be conducted in total silence: all team members thus must know the signals for all team duties. The main signals used are as follows:

a. **Lost Spoor**. The tracker uses this signal to indicate to the controller he has temporarily lost the tracks. To do so, he stretches out his arm and turns his hand palm upwards, the fingers stretched out in the shape of a cup.

NOTE

Tracking teams may adopt other silent signals in response to specific needs, but it is essential that they are familiar with the six signals described above, which are in use throughout the world.

b. **Spoor Relocated**. This signal indicates the tracker has relocated the tracks. The signal is the opposite of the one used to indicate a lost spoor: the tracker stretches out his fingers and points his hand in the direction of the relocated tracks trail. The flank tracker also uses this signal to indicate to the controller that he has found a spoor.

c. **Search for Lost Spoor**. When the tracker cannot find the spoor, the controller must inform the flank tracker of the situation. If he wants him to take part as well in the search, he raises his (left or right) index finger, points at the flank tracker, turns his hand and points in the direction where he wants the search to take place.

d. **Crossover**. When the tracker cannot relocate the tracks, the controller informs the flank tracker of the situation. If he wants him to take part as well in the search, he points his index finger at the flank tracker, extends both arms to the front and crosses them. At that point, the flank tracker moves to the other flank of the tracker looking for the lost spoor.

e. **Traps**. Any member of a team who finds what appears to be a trap will inform the other members of the team by raising the index and middle finger of his (left or right) hand, with his fist closed, pointing downwards in the direction of the trap.

f. **Enemy Sighted**. When someone in the team sights an enemy, they immediately remain still and notify the other members of the team by pointing their thumb downwards with the hand closed, then pointing their arm slowly in the direction of the enemy while keeping the sighting position. The other members of the team then look in the direction indicated. Once they have identified the enemy, they

signal his presence by placing their arms on their shoulders. The controller then passes on orders or the members of the team implement an immediate action drill, depending on the situation.

NOTE

When a tracker becomes aware that the enemy is using anti-tracking techniques, trying to mislead the tracking team, he will notify other team members that the enemy knows or suspects he is being followed.

ANTI-TRACKING TECHNIQUES

85. An enemy who knows he is being followed will do anything possible to mislead the tracking team, e.g. put distance between himself and them, hide his tracks, lay a false spoor, set traps, or wait for the trackers and ambush them. Regardless of the technique, the tracker has a number of advantages on his side, as follows:

a. All anti-tracking techniques slow the enemy down and allow trackers to reduce the time/distance gap.

b. A skilled tracker can recognize all anti-tracking techniques. The tracker is capable of neutralizing them and will learn more from them about the enemy's capabilities.

c. Regardless of the anti-tracking techniques used, a skilled, dynamic tracker using lost spoor procedures will relocate the enemy's tracks, and then will be able to continue following and closing with his enemy.

86. Common anti-tracking techniques are as follows:

a. **Obliterating Tracks**. Obliterating tracks with a broom made of branches, twigs or leaves is probably the most frequently used method. This takes a great deal of time and energy, and cannot be used over long distances. A common technique is to sweep away tracks when crossing a dirt road so that they are not visible. Regardless of how carefully the enemy tries to put trackers off the scent, the manoeuvre does not escape a practiced eye because the spoor suddenly disappears. The lost spoor procedure enables you to eventually relocate it.

b. **Replacing Foliage**. This is another common technique. Simply put, the enemy returns foliage to its natural state after passing through it. The enemy will attempt to replace broken or displaced grass and branches to their original position, possibly using a stick. This can be done over a distance of several metres. Since the enemy cannot go back to check his work, he does not know how effective he has been. Not only must the sniper replace foliage, but he must obliterate his tracks, which slows him further.

c. **Moving over Hard, Rocky Ground**. This is probably the most economical anti-tracking method in terms of the physical effort and time required. When crossing an area of hard, rocky or pebble-strewn ground, on which little or no tracks are left, the enemy may believe he can mislead the tracker. The short-term success achieved by the enemy using this method will depend on the extent of the hard ground. A good tracker will nonetheless still be able to identify evidence of the enemy's passage. A practiced eye will note damaged moss, and stones that have been moved. The disadvantage for the enemy is that he must sooner or later leave the hard ground. By searching for spoor around the perimeter of the area of hard ground, tracks will be found relatively quickly, provided the area is not too large.

d. **Moving in Water**. Water seems to attract people who are trying to escape. The idea that water can eliminate all traces of personnel moving is not necessarily true. This depends on the force of the current and the composition of the river bed. Often, if the river or stream is muddy and the current is weak, lighter coloured traces of mud may reveal the tracks left by the enemy. In some cases, prints may remain visible for several days. Trackers should note the following:

(1) When a tracker is following a spoor in a river, look for the following details in the water:

(a) crushed or broken aquatic plants or reeds; and

(b) splashes of water on the rocks.

(2) Look for the following details along a river bank:

(a) mud on rocks and stones;

(b) deposits of earth or sand that are not normal for that area; and

(c) traces of moisture on foliage or dry ground.

e. **Covering the Feet**. The enemy can reduce his tracks by placing something over the soles of his boots or by changing the design of his soles. By wearing socks on top of his boots or attaching strips of cloth, sacking or animal skins to his footwear, the enemy can blur the outline of his soles. The enemy will, however, leave a wider track and will still make marks on the earth matching the normal length of a man's stride. Clear evidence that a man has passed will be left where there is grass or foliage.

f. **Changing Shoes**. This is a technique that is frequently used in many third world countries. The enemy must have at least two pairs of shoes with him. A careful examination of the spot where you suspect the enemy is using this method will readily reveal this strategy. If the shoes are changed where there is little traffic, you will note new tracks where the old ones end and can continue following up. However, if the enemy comes to a heavily traveled trail and changes shoes on it, it

becomes very difficult to distinguish between the tracks of the enemy and those of other walkers.

g. **Walking Backwards**. By walking backwards, the enemy merely confirms to the tracker he knows he is being followed. Due to the change in the way the sole first makes contact with the ground, the tracker can see immediately that the enemy is engaging in an anti-tracking technique.

h. **Walking on Paths and Trails**. Another common anti-tracking technique is for the enemy to use a heavily travelled trail so that other walkers will cover and erase his tracks. On a well-used dirt road, the enemy can also walk in tire ruts, so that subsequent automobile traffic will erase his tracks. These two techniques are extremely difficult to detect; only a careful examination of the trail or road over a distance of several hundred metres in both directions will allow the tracker to relocate the spoor. This is a painstaking, frustrating job, in which success or failure depends on the number of pedestrians or vehicles which have used the road behind the enemy. The enemy may completely hide his tracks by walking on paved surfaces; it is then difficult, if not impossible, to track him. The most that a tracker can do under such circumstances is to search along the shoulder for the spot where the enemy left the road.

i. **Changing Direction Suddenly**. The enemy may suddenly change direction (approximately 120 to 170º), preferably on hard or rocky ground. The tracker will relocate the tracks sooner or later by using lost spoor procedure, but such sudden changes of direction can delay follow-up in many cases, increasing the time/space gap.

SPOOR REDUCTION TECHNIQUES

87. Spoor reduction techniques are an effective way of delaying trackers. Essentially, the enemy will separate into smaller and smaller groups until it becomes necessary to call on several trackers to follow the various spoor.

88. Methods of spoor reduction are as follows:

a. **Disperse and Regroup**. To reduce spoor, the enemy commonly resorts to members of a group moving off in different directions, regrouping later at a pre-arranged rally point. This will complicate the tracker's task in a number of ways. First, the tracker must identify the spoor he has to follow. Second, it is difficult for him to assess the number of enemy involved. Third; it is difficult to establish the direction in which the enemy is moving.

b. **Dividing into Groups**. This technique is essentially the same as the previous one, except instead of individuals splitting up, the enemy breaks up into small groups. In a situation such as this, it is generally preferable to follow the largest group, but note that this group can divide up again. The same principle applies: follow the largest group or the most promising spoor. If the enemy group decides

to divide up in order to escape the tracker, this is a sign he knows he is being tracked.

c. **Split off Some Members of the Group**. An enemy group that becomes aware it is being tracked will begin to split off its members at places along its route that are appropriate for anti-tracking methods, e.g. rocky river beds, paved roads or heavily traveled trails. The individuals who have split off from the group will then begin to use anti-tracking techniques, but the main group will not. This technique is especially effective on rocky ground, where it can be easily implemented leaving little or no spoor. If possible, additional trackers should follow any enemy that have split off. Security of the trackers must be emphasized as the possibility of being ambushed is likely. If the number of trackers is limited, and the requirement for catching up to the enemy is low, it may be better to follow the enemy's tracks backwards to its origin in order to provide information on the enemy's mission.

LOST SPOOR PROCEDURE

89. **Sniper Lost Spoor Procedures**. During any type of follow-up, losing the spoor trail at some point is inevitable. As with a dedicated tracking team, snipers must have set procedures established to re-locate spoor and continue the follow-up. With sniper detachment or team tracking operations, normal lost spoor procedures are modified to account for the reduced numbers.

90. **Sniper Lost Spoor Procedure 1**. The first rule when losing the spoor trail is to stop. The tracker will inform the controller by giving the lost spoor hand signal. It is essential that the last known spoor be marked by placing a stick, rock, or some other recognizable item on it. At this time the tracker signals to the controller to come forward and stand just behind it. The tracker then positions himself to the rear of the last known spoor and conducts a visual scan past the last known spoor along likely lines to see if he can pick up any indicators. If this is unsuccessful he implements lost spoor procedures:

a. **Likely Line of Advance Search**. When the visual scan does not turn up any indicators the tracker advances forward about 30 to 40 m along the most likely line of advance looking for any indicators. If unsuccessful he returns to the last known spoor. This process is repeated along other likely lines until the spoor is located.

b. **Crossover**. On command from the controller the flanker turns in the direction of the probable track, 90º to his original line of travel, and slowly moves in the direction of the probable enemy spoor, looking for signs. When he completes his sweep, he stops, turns to the controller, and indicates search results by hand signal.

c. **Pie Search**. Depending on terrain and vegetation another option is to conduct a pie search, as follows: Advance from the last known spoor offset 30º from the most likely line of advance for 30 to 40 m. Make a roughly 90º turn to move towards the likely line of advance, then cross over it and move approximately the same distance

past it so that another roughly 90º turn will take you back to where you started your search at the last known spoor. This allows the tracker to quickly cover more area forward of the last known spoor. If operating as a LRSW team and utilizing the flank tracker, the tracker should stay inside the sector secured by the flank tracker.

91. **Sniper Lost Spoor Procedure 2**. This procedure is used when operating as a detachment, using not only the tracker but the flank tracker as well. Lost Spoor Procedure 2 is commonly referred to as the 360. There are two methods of conducting the 360, the tracker 360 search, used by the tracker in a sniper detachment, and the team 360 search, which cannot be used by the sniper detachment. For the sniper tracking team, they can be performed sequentially or simultaneously depending on the ground and tactical situation:

a. **Tracker 360 Search**. Using the last known spoor as the center point, the tracker moves backward along the tracks about 30 m and commences to search in a circle around the last known spoor in an attempt to cut the spoor trail. By commencing the 360 to the rear of the last known spoor, the tracker can pick up the quarry's trail if he attempted to hook back before establishing a hide or ambush on the trail. If the spoor is not found the circle is widened and the procedure is repeated until the trail is located. If operating as a sniper detachment, the tracker must stay within a tactically sound distance and in visual contact with the controller. If operating as a sniper team the tracker should stay within the sector secured by the flank tracker both for security as well as to avoid cutting the spoor trail accidentally. The controller and the flank tracker position themselves so they can provide cover for the tracker if required.

b. **Team 360 Search**. Remember that this search can only be used by sniper teams. If the tracker's 360 search fails to locate the spoor, the controller details the flank tracker to commence further 360s out beyond the 360 done by the tracker. The circles should intersect to ensure that both the tracker and the flank tracker cover mutual ground. If the spoor is not found, the circles are widened, extending out as far as the controller feels is tactically sound. If the ground does not allow line of sight between the controller and the flank tracker, the flank tracker will not conduct his 360. While conducting the team 360 search, the controller is in a position to provide cover for both the tracker and the flank tracker as they attempt to re-locate the spoor trial. When conducting the team 360, both the tracker and the flank tracker are vulnerable, and thus should scan the area carefully before moving and always try to stay within visual contact of one another.

c. **Cutting Spoor**. Using a map, select an area forward of the last known spoor which the quarry is likely to have passed through. The area should have several human-made or natural lines, such as a road, stream, power line, forest cut or foot paths, that box in the area. Moving as a team search along the natural lines looking for his crossing point. Once it has been found and confirmed continue the follow-up from that point. If however you are not successful in locating the crossing point continue along the natural lines till you return to your original last known spoor. This process may have to be repeated until you re-locate the spoor trial. All attempts should be made to minimize contaminating the natural lines

with your prints. At all times all snipers must be vigilant, alert to the possibility of ambushes and obvious danger areas that could channel them into a kill zone.

CONDUCT FOLLOW-UP

NOTE

Regardless of the method used, do not waste too much time looking for witnesses. The important thing is to set off on the enemy's trail as soon as possible.

92. In order to be able to conduct an effective follow-up, a tracking team must have available certain essential elements of information (EEI). Without this information, the trackers may follow a false spoor and waste precious time. The initial assessments made by the team and the initial conclusions it reached prior to the start of the follow-up are useful to other teams and supporting elements involved in the operation. By passing on correct information, the appropriate use of additional resources, such as helicopters, is assured.

93. There are five EEI, which you absolutely MUST know before undertaking a follow-up. The elements are set out below:

a. **Ascertaining the Correct Spoor**. When they reach the place where a follow-up can take place, trackers must make sure that the spoor they intend to follow is the right one. Once the spoor has been identified, either by witness confirmation, a search or deduction, they can move on to the next stage.

b. **Assessing the Number of Personnel Involved**. If there are witnesses, it is easy to find out the number of enemy. Most often, however, you must make your own assessment by searching the area and analyzing available evidence. After collecting all available evidence, if the tracks allow you to determine that the group is larger than 5 or 6 personnel, the average pace method will be applied to determine the number of tracks. It is, however, pointless at this stage to obtain a precise number at any cost. It is much better to say, for example, that there are between 10 and 15 personnel, and to continue the follow-up. This assessment can always be corrected later when further information is available.

c. **Recording Spoor Patterns**. As it is essential to transmit useful information to headquarters and to other tracking teams, it is important to note and to record the design of the fugitives' footprints. This is a complicated job, as there are thousands of different designs and most of them are complex. When the footprints are clearly defined and they can be photographed a Polaroid digital camera can be used. US search and rescue teams have adopted a system according to which footprints fall into two broad categories: shoes with heels and flat shoes. Shoes with heels have a distinct, separate heel, such as evening shoes or boots, whereas flat shoes have no heel. Some designs such as Viram soles, Panama soles and waffle soles are easy to recognize, and most soldiers are capable of identifying them, while others are extremely complex. Measuring footprints makes it easier to follow the right spoor and to identify the size of the

enemy. To do this, it is necessary to measure the tracks from the primary to final impact point.

d. **Determine the Initial Direction of Flight**. Before undertaking a follow-up, it is important to establish the initial direction of the enemy's movement, so that headquarters can mark the information on a control map. Even if we know that the enemy does not always move in the same direction, this information helps determine which counter-measures to choose, e.g. informing observation posts, setting up ambushes, and establishing the direction that interception patrols should take. It is not necessary to transmit a bearing, but simply the cardinal points. During the follow-up, any significant change of direction must be reported to headquarters so that it can trace the tracks on the map and maintain accurate data about the follow-up. A GPS is a valuable resource which allows you to record precisely the point of departure for the follow-up, together with every change of direction as the follow-up proceeds.

e. **Assessing the Age of the Spoor.** Before embarking on a follow-up, establishing the age of the spoor provides very useful information. This allows us to determine the time/distance gap to reach the enemy. Here are a few ways of establishing the age of a spoor:

(1) know the specific moment at which the incident occurred (e.g. an ambush or an attack);

(2) ask witnesses if they can determine the precise moment at which the incident occurred; and

(3) make an assessment which takes into account capabilities, experience, the impact of climatic conditions and other factors.

94. **Transmission of a SITREP**. Transmit a SITREP by radio to headquarters, including the following information (remember the acronym ENDAT):

a. **Emplacement**. Departure point or last known tracks (grid references).

b. **Number**. Of enemy.

c. **Direction**. The initial direction of the enemy's movement (cardinal point).

d. **Age**. Approximate age of the spoor in 2 hour blocks.

e. **Type**. Nature of footprint designs.

f. **Here is an example of a SITREP**:

(1) 6 THIS IS 61A SITREP OVER;

(2) **Alpha**. Departure point grid 123456; number of enemy, two; direction of movement, north-east; age of the spoor, 4 hours; nature of footprint designs, heeled soles.

(3) **Bravo**. Undertaking follow-up (i.e. your actions).

(4) **Charlie**. Nil (i.e. administrative points); and

(5) **Delta**. I propose that 61C move further north to intercept the enemy on the trail level with the river.

NOTE

SITREPS must be sent at regular intervals to allow headquarters to follow progress on the map and plan appropriate counter-measures. You must send a SITREP at the beginning of the follow-up and as soon as a change of direction occurs.

95. **Sniper Night Tracking Operations**. Snipers must be able to conduct operations by night in pursuit of the enemy or to gather critical intelligence. Under ideal conditions follow-ups may be conducted in open or sparsely foliated areas utilizing the AN/PVS-504 and the AN/PVS-14. This is possible due to temperature changes at night. The change in air temperature from ambient day to night creates dew that covers the ground and vegetation. Any movement across dew covered areas is easily discernible using night vision devices. If the climatic conditions do not produce night dew, the passage of a man is still detectable when the ground is closely scrutinized. At no time should an infrared beam be used to illuminate the spoor trial, since the active beam can be seen by anyone using night vision devices. Conversely, if the enemy is using active night vision devices, infrared laser range finders or perimeter security devices employing infrared beam technology, snipers will be able to detect them and respond accordingly. Note that conducting night tracking operations is inherently dangerous considering that night viewing devices are increasingly being used by armed forces world-wide. Before considering a night tracking operation, snipers must first consider the capability of the enemy, whether he has equal or superior night vision and surveillance equipment, the level of threat posed, and the value of the target or intelligence to be gathered.

SECTION 7
NAVIGATION

INTRODUCTION

96. With the advent of GPS, navigation and determining position has become easier and more accurate. With the extended periods of time and isolation the sniper is expected to operate in he must be aware however that battery life will become an issue if he relies too heavily on these devices. The ability to navigate with map and compass is a must for a sniper. The most accurate shooting is useless unless the sniper can find the best position to detect his target.

97. Detailed information on map reading may be found in B-GL-382-005/PT-001 *Maps, Field Sketching and Compasses*.

MAP READING

98. The ability to read a map quickly and accurately is a vital requirement for the sniper. He must have confidence in his knowledge and ability, and be self-reliant during operations.

99. Every opportunity must be taken by the sniper to work out of doors with a map, protractor and compass. The practical approach, if done intelligently and with a will to learn, can teach far more than an equivalent time spent indoors.

100. Some examples of how map reading skills can help the sniper are:

a. determining range to a target;

b. selecting a fire position;

c. selecting a route to a fire position, to an observation point, or a stalk;

d. determining the length of time it will take to move across a certain distance; and

e. making an accurate log or report.

101. Snipers must have a complete understanding of the following:

a. **Conventional Signs, Scales and Relief**. The sniper must be able to quickly convert distances on a map to distances on the ground, and to calculate how long it would take to cover any given distance at a given speed. He must be able to correctly identify map symbols, and high and low ground, and thoroughly understand the methods of determining inter-visibility.

b. **Grid System, Bearings and Setting a Map**. The sniper must be able to give or to locate the precise position of any point using grid co-ordinates. He must be able to orient a map.

c. **Use of the Compass**. The compass is an important item of sniper equipment. The sniper will have to use it for such purposes as finding his way at night, and determining his position and that of objects to his front. It is essential that he understand all aspects of using his compass, including finding his own location by resection.

AIR PHOTOGRAPH READING AND INTERPRETATION

102. An air photograph can often add to the information found on a map, particularly when the user is trained in interpreting the detail seen on an air photograph.

103. The sniper must have a complete understanding of the following:

a. **Feature Recognition**. An air photograph will show ground features in far more detail than a map. In addition, air photographs are more current and show details like recent earthworks and fresh tracks which are not included on maps. To make use of air photographs one must be able to identify features.

b. **Measuring Distances and Plotting Positions**. The sniper must be able to measure distances on an air photograph and plot positions using single or cross bearings. He must then be able to relate these to a map if necessary.

c. **Scaling**. The sniper must be proficient at scaling air photographs by use of the following methods:

(1) photograph to map comparison method;

(2) parallel line method;

(3) feature recognition method; and

(4) focal length method.

d. **Gridding and Navigation**. The air photograph can be gridded and used as a map for navigation. This provides the sniper with the most up to date and detailed map possible for use in navigation or stalking.

e. Use of air photographs and methods of scaling are detailed in B-GL-382-005/PT-001 *Maps, Field Sketching and Compasses*.

GEOMATIC SUPPORT

104. Unit Geomatic support can provide a wealth of information to the sniper on terrain including customized maps, 3 dimensional views or flybys of a route or objective. Geomatic support may also provide a line of sight feature that will assist the sniper in selecting possible positions for observation, fire, and ORVs. A strong relationship between the Unit Master Sniper and available geomatic support personnel will greatly assist the sniper platoon in conducting operations.

SECTION 8
HIDES AND POSITIONS

INTRODUCTION

105. A sniper mission will always require the sniper to occupy some type of position. These positions will either be a hasty position, which a sniper may use for a few hours, or a prepared hide, which the team could remain in for a few days. When choosing and constructing hides, snipers must use their imagination and ingenuity to reduce the time and difficulty of position construction. Snipers should always plan to build their hides during limited visibility.

CONSIDERATIONS

106. Whether a sniper will be in a position for a few minutes or a few days, the basic considerations in choosing a specific type of position will be the same:

a. **Type of Terrain and Soil**. Digging and boring of tunnels can be very difficult in hard soil or in fine, loose sand. The sniper needs to take advantage of what the terrain offers (e.g. gullies, holes, hollow tree stumps).

b. **Amount of Time to be Occupied**. If the snipers' mission requires them to be in position for an extended time, construction of a position that provides more survivability must be considered. This will allow snipers to operate more effectively for a longer time. The time needed to build a position must be a factor considered during the mission planning phase.

c. **Personnel and Equipment**. Snipers may need to plan for extra equipment or personnel needed for construction. Coordination needs to take place if the position requires more personnel to build it or a security element to secure the area during construction.

HASTY POSITION

107. A hasty position is used when snipers will be in position for a short time, when they cannot construct a position due to the location of the enemy, or when they must assume a position immediately. The hasty position is characterized by the following:

a. **Advantages**:

(1) Requires no construction. Snipers use what is available for cover and concealment.

(2) Can be occupied immediately. As soon as a suitable position is found, snipers need only prepare loopholes, move small amounts of vegetation, or simply back a metre or so away from the vegetation that is already there to conceal the weapon's muzzle blast.

b. **Disadvantages**:

(1) No freedom of movement. This position does not allow snipers free movement. Any movement that is not slow and deliberate may result in the team being compromised.

(2) Observation of large areas can be restricted. This type of position is normally used to observe a specific target point (e.g. intersection, passage, or crossing) rather than large open areas that require reconnaissance of the area to locate the best vantage point.

(3) Limited protection from direct or indirect fire.

(4) Must rely heavily on personal camouflage. The sniper's only protection against detection is personal camouflage and the ability to use the available terrain.

c. **Occupation Time**. Snipers should not remain in this type of position longer than 12 hours. Remaining in this position longer than this will only result in loss of effectiveness due to muscle strain or cramps, combined with eye fatigue, because the position allows no freedom of movement.

PREPARED HIDES

108. When snipers are required to remain in position for an extended time a prepared hide should be constructed. These hides, depending on the degree of construction, can provide snipers with a protective, concealed operational position for up to 72 hours or longer. Some requirements that must be considered when constructing hides are loopholes, elbow rests, cover, front and rear appearance, and the entrance.

109. **Loopholes**. A loophole is an aperture made in the hide for observation and firing from under concealment. Loopholes should be constructed so they afford an adequate view of the required field of fire. They should not be positioned aiming directly into the sun at times in the day when the majority of shooting is planned. They should be constructed so that they are wide at the back and narrow in the front, but not so narrow that observation is restricted. Loopholes may be made of any materials that are natural to the surrounding or that can be readily concealed.

110. **Elbow Rest**. Some form of rest for the firer and observer should be constructed. This type of rest can be constructed with sandbags to the rear of the firing and observation loopholes.

111. **Cover**. This will provide protection from direct and indirect fire as well as some comfort. To get adequate protection, the cover should have at least 60 cm of soil over logs or corrugated iron sheets (CGI) if possible. If waterproofing is desired, ponchos, canvas, or any available waterproof material may be placed between the log/CGI and soil layers to prevent water from seeping through.

112. **Front and Rear Appearance**. The natural appearance of the ground in front and rear of the hide must remain unaltered to avoid detection. If the hide is properly constructed and concealed, the enemy should be able to pass right over the top of it without suspecting the presence of snipers.

113. **Entrance**. The entrance must be as well concealed as the front of the hide and preferably have a covered approach route. Once inside the hide, the entrance is covered to prevent light from casting through the loopholes. Movement in and out of the hide should be kept to a minimum.

TYPES OF HIDES

114. There are three basic types of hides. The actual size and shape of the hide will vary according to the situation. The hide should be modified to meet the demands of the situation:

a. **Belly Hide**. This type of hide is best used in mobile situations or when the sniper does not plan to be in position for an extended period of time:

(1) **Advantages**:

(a) it is simple and can be built quickly; and

(b) many can be made if the sniper team is expected to be mobile.

(2) **Disadvantages**:

(a) it is uncomfortable and cannot be occupied for long periods of time;

(b) the sniper's head and shoulders may be exposed to enemy fire; and

(c) there is no protection from weather or enemy fire.

(3) **Construction**:

(a) Construction of a belly hide consists of digging a shell scrape or enlarging a depression in the ground. Light cover (vegetation screen or net) is then used to conceal as much of the body as possible. The head and shoulders may be exposed when in this firing position.

(b) The hide is constructed so that the observer and shooter are in the same hole, ensuring effective communications.

(c) Construction time 1 to 3 hours.

(d) Occupation time 12 to 24 hours.

b. **Improved Fire Trench**. This hide is no more than an improved fighting trench:

(1) **Advantages**:

(a) easily constructed by modifying an existing battle trench;

(b) when required the sniper team simply replaces the riflemen normally occupying the trench;

(c) many trenches can be modified, covering all possible avenues of approach or fields of fire;

(d) it can be occupied for long periods of time with some degree of comfort; and

(e) provides excellent protection from indirect fire.

(2) **Disadvantages**:

(a) it is not easily entered or exited; and

(b) the sniper weapon system slow rate of fire is a limitation in a pitched defensive battle.

(3) **Construction**:

(a) a net type camouflage cover is constructed and kept in place (but out of sight) until snipers occupy the trench;

(b) elbow rests or shooting/observer platforms may also be modified in selected battle trenches without radical alteration;

(c) construction time 2 to 4 hours; and

(d) occupation time 24 hours or more.

c. **Semi-permanent Hide**. These hides resemble fortified bunkers and should always be used if time and situation permit. These hides can be built in berms, buildings, or on suitable, advantageous ground:

(1) **Advantages**:

(a) it can be occupied for long periods of time with some comfort;

(b) gives protection from direct and indirect fire and shrapnel; and

(c) enables freedom of movement inside the hide.

(2) **Disadvantages**:

(a) takes time to construct;

(b) equipment such as picks, shovels, axes, saws, etc. are needed for construction;

(c) additional personnel may be required to assist in construction;.

(d) construction time 4 to 5 hours (for four personnel); and

(e) occupation time 48 hours or more.

(3) **Special Points for "Building" Hides**. Buildings offer good opportunities as firing positions and observation posts (OPs) under static conditions. It should be remembered, however, that isolated buildings and prominent structures such as city halls, churches, and schools are likely to be targeted by the enemy. Buildings should be prepared much the same way as other hides:

(a) Special care should be taken not to alter the outward appearance of the building by opening windows or doors that were found closed. Curtains should not be removed. Windows can provide excellent firing positions. They can be reinforced with sandbags or other available materials. However, the sniper must avoid barricading only the window from which he is firing, and he must be sure to create irregular shaped loopholes that are not easily identified by the enemy.

(b) Actual firing positions should be well back into the natural shadows of the room. A drape screen should be used if possible.

(c) The roof hide is an urban hide built in the roof of a frame type building. When the roof has no structure protruding to provide protection, the position must be prepared from underneath the roof. A few small pieces of roofing material should be removed to allow the sniper to engage targets in his sector. The position should be supported and reinforced with sandbags. The sniper may fire from a loophole constructed under a roof tile that has been removed or displaced. There should be no visible sign of the hide or the sniper.

HIDE CONSTRUCTION TECHNIQUES

115. **Hide Construction Factors**. There are several factors snipers must consider before constructing a hide:

a. **Concealed Approach**. It is essential that the natural appearance of the ground remain unaltered, and that any camouflage done reflects the natural terrain and environment. All work done on the hide is wasted if snipers are observed entering the hide:

(1) Hides should have concealed approaches whenever possible.

(2) Enter the hide under cover of darkness.

(3) Movement around the hide should be held to a minimum and trail discipline adhered to.

(4) In built-up areas, a secure and quiet approach is needed. A possible ploy might be to use a house search with the sniper gear hidden among the rest of the patrol's gear. Sewers may be used for movement.

b. **Start with Slit Trench**. Construction of the hide should begin with the slit trench. This gives the sniper team something to fight from if they are compromised. All uncovered dirt or spoil should be carried off in a sandbag or poncho, and hidden. This dirt may be placed in ploughed fields, under a log, around the base of bushes, or just carried a distance away from the hide and camouflaged.

c. **Loopholes**. The construction of loopholes requires care and practice. They must afford adequate coverage of the field of fire, and this must be checked throughout hide construction:

(1) Loopholes should be constructed so that they are as narrow as possible in the front and then wide on the inside. This presents a small hole from in front of the hide but allows snipers to observe and shoot by simply moving their position inside of the hide.

(2) Loopholes must be camouflaged using foliage or other material that blends with or is natural to the surroundings. Anything not in keeping with its surroundings will attract enemy attention.

d. **Overhead Cover**:

(1) In a semi-permanent hide, large logs can form the base of the roof.

(2) A dust cover made from a poncho, layers of empty sandbags, or canvas is then placed over the logs. This serves to weatherproof the hide.

(3) After the dust cover has been placed, dirt is placed over it for protection. Then if available, a layer of gravel is added.

(4) After the gravel, lay a final layer of dirt and then camouflage.

(5) Remember, with all of this material the roof must be countersunk or there will be a large mound that is difficult to conceal.

e. **Bullet Proof**. Every effort should be taken to construct the front of the hide so that it is bullet proof. The following techniques can be used:

(1) flak jackets or blast blankets can be stuffed around the loophole areas;

(2) scavenged armour plate with loopholes cut into it can be placed behind the actual hide loopholes; and

(3) loopholes can be sandbagged from the inside.

f. **Screens**. Any light shining through the loophole from the rear will appear as a headlight in the ground, giving the position away. There thus must be a cover or screen over the entrance and also one on the inside of the loopholes:

(1) when a sniper is using the entrance the loopholes must be covered, and when the loopholes are in use the entrance must be covered; and

(2) there must be a door on the entrance which is sturdy enough to hold someone if they step on it.

g. **Comfort**. Snipers must not be cramped and uncomfortable in the hide. Effectiveness will drop if snipers are unable to relax and perform their mission without undue stress:

(1) adequate headroom is essential for firing and observing;

(2) a seat or bench arrangement is essential so that the team has a place to relax; and

(3) in a snow hide, available materials may be placed on the floor of the hide to provide warmth.

116. **Materials**. Hides may be made of soil, stone, brick, wood, vegetation or turf. Materials used should reflect the natural environment and terrain. Hides will more often than not be built in close proximity to the enemy so elaborate construction will be rare:

a. Vegetation used to conceal hides must be changed periodically to prevent wilting or an unnatural appearance.

b. Snow hides must be constructed the same way. They must be built using the surrounding materials and they must appear as natural as possible so that they remain undetected by the enemy.

117. **Tools**. The sniper may use several types of tools for hide construction, using whatever is available (e.g. bayonet, knife, entrenching tool, shovel, axe, pick, saw, and sandbags). Most tools are too bulky to be carried by the sniper. If a backup patrol is to be used to assist in carrying any tools, prior coordination is required. If a backup patrol is to help construct a hide, they should be briefed prior to departure on what will be expected of them.

HIDE OCCUPATION

118. **Occupation of Positions**. During the mission planning phase, the sniper will select an objective rendezvous (ORV). From this location snipers will reconnoitre the tentative position to determine the exact location of the hide. The ORV location should provide cover and concealment from enemy fire and observation, be located as close to the selected area as possible, and have good routes into and out of the selected area:

a. From the ORV, snipers move forward to a location that allows them to view the tentative position area. One member will remain in this location and cover the other member while he reconnoitres the area to locate a final position. Once a suitable location has been found, the covering team member will move to the position.

b. **Actions in Position**. During the construction of the hide, the following actions must occur:

(1) Equipment must be organized so that the only gear out is what is being used at that moment. In the event of an emergency exit, the snipers will thus not have to pack gear.

(2) Hasty and detailed searches are conducted.

(3) Range card is produced.

(4) Establish a routine for constructing, observing/security, resting, eating and performing bodily functions. Snipers should alternate duties every 30 to 60 minutes. This will allow snipers to remain effective for longer periods of time.

119. **Conduct of Hide Routine**. An established hide routine is vital for operations over a prolonged period of time. All snipers must rest regularly. If not performance will decrease very quickly. The following must be considered:

a. **Rest**. Sleep is an important consideration in the hide but it is not as important as fatigue. Snipers must frequently alternate as observer. Eye fatigue will result if the sniper spends too long at one time observing with optical aids. Shifts of 30 to 60 minutes will normally ensure adequate rest. Sleep can be accomplished when not observing or conducting maintenance.

b. **Human Waste**. Body functions are a problem in the hide however there are a number of field expedient solutions. Large, sturdy plastic bottles can be taken in to the hide for urination, but they have to be disposed of and replaced during resupply. Defecation can be accomplished in the hide using a respirator case lined with saran wrap, with excrement being secured in the saran wrap for disposal.

c. **Ablutions**. Washing and shaving depend on the amount of time snipers are in position. Normally you will not shave or wash due to limited water supply. If you do wash or shave it is important that you not use scented soaps, etc. Ensure that you reapply camouflage paint immediately.

d. **Equipment**. The golden rule is pack everything not in use. Once you have cooked, slept or used anything repack it immediately. Rucksacks should be positioned near the hide entrance for quick exit. Weapons should be maintained

on a regular basis to ensure optimum condition. Never strip either weapon beyond the field strip, and never strip both weapons at the same time.

e. **Feeding**. Meals will normally be eaten cold. Cooked food odours travel much farther than those of cold food. In winter conditions it may be necessary to cook the rations to thaw them. It is important under all conditions that snipers eat as regularly as possible. This will ensure that performance does not decline.

f. **Keeping Warm**. Sniper clothing must be chosen with care. The sniper will select clothing that offers the maximum warmth with minimum weight. Experience is the best guide in selecting the best clothing for a given region. Chemical heat sources may provide snipers with a means of heating rations and themselves.

g. **Security**. Hide security is a major concern during any operation. Snipers hopefully will be inserted after dark (and later be taken out) by a patrol that provides local security while the snipers enter the hide, and then camouflages the entry hole. Once inside the hide the snipers' own discipline should ensure that they are not spotted. Snipers should whenever possible only emerge after dark, and only along their concealed approach. The only exception is if snipers are discovered and must bug out quickly. In the hide, animals (e.g. dogs) can be a problem. There are no guaranteed solutions to avoid this but some aids that may keep animals away include commercial animal repellents, mace, and ground pepper spread around the hide area and on the approaches to the hide. Radio security is important. Correct radio formats and procedures are essential, and the sniper must not inadvertently compromise a position by speaking in clear. Resupply will not normally be conducted during a sniper mission, but if resupply is done it should be at night, in a secure area, and away from the area of the hide.

FIRING FROM HIDES

120. **Discipline**. Fire from a hide must be discreet and only undertaken at specific targets. Haphazard harassing fire will quickly lead to the enemy locating the hide and directing fire at it.

121. **Flash**. At dusk and dawn, muzzle flash from a shot can usually be clearly seen, and care must be taken not to disclose the position of the hide when firing under such circumstances.

122. **Smoke**. On frosty mornings and damp days there is a greater danger of smoke from the rifle giving away the position. An oily barrel can also cause this. On such occasions the sniper must keep as far back in the hide as possible.

123. **Blast**. When surroundings are dry and dusty, the sniper must be careful not to cause too much dust to rise. It may be necessary to dampen the surroundings at the loophole and the hide when there is a danger of rising dust.

AIDS TO SHOOTING

124. **Range Card**. As soon as possible after occupying a hide snipers should prepare a range card of their field of view. This card should be done by both members to ensure maximum range estimation accuracy. Key ranges should be entered so that both snipers are familiar with the location and range to all reference points.

125. **Weapon Maintenance**. Failure to keep weapons maintained can also lead to identification of the hide. Oil or CLP in the barrel will lead to smoke which can identify your position. Optics must also be maintained if well camouflaged targets are to be observed.

126. **Weather**. The weather can directly affect firing from a hide, e.g. the glint of the sun off optics can reveal your position, and raindrops on optics will decrease observation. Put a hood over the end of the telescopic sight and spotting scope to mask glare and protect optics.

SECTION 9
EVASION AND SURVIVAL

GENERAL

127. In general war, operations may well involve the deployment of snipers in isolated positions, outside the immediate protection of other friendly sub-units. It is possible therefore that snipers could become separated from their own forces and may need to evade capture.

128. Historically, the sniper has been the most hated adversary on the battlefield, often being submitted to heinous retribution by the enemy, once captured. Therefore the sniper must never surrender to the enemy unless continued evasion and resistance will lead only to certain death with no significant loss to the enemy. When a sniper is evading capture he has the capability to continue to inflict casualties on the enemy.

129. **Immediate Action**. When faced with a survival situation the primary tasks are:

a. seek safety (location);

b. administer first aid if required;

c. assess equipment (rations, medical, weapons, water etc.); and

d. decide upon a course of action, and make a PLAN.

EVASION PLANNING

130. **Evasion Plan of Action**. When planning a mission, the sniper should have an escape plan. Operating with conventional forces, this plan will probably be very simple and basic because the sniper will not be venturing far from the forward line of own troops. However, sniper missions often place them behind enemy lines. Evasion planning should include:

a. **Terrain and Climate**. Current conditions and terrain of the area of operation and the route to the objective area.

b. **Civilian Population**. Include numbers, political beliefs, dress and customs, paramilitary forces, and controls and restrictions.

c. **Service Support**. Survival kits, special equipment and inspections.

d. **Re-entry of Friendly Lines**. Locations, units, recognition signals, etc.

e. **Evasion Route**. The evasion route should be easy to remember as well as easy to follow. Use a cardinal direction or prominent terrain feature as a general guide. If snipers are going to be operating with unconventional forces or if the mission will take them far behind enemy lines, more extensive information concerning evasion routes and recovery networks should be provided in the plan.

131. **Separation without a Plan**. If snipers are separated from friendly forces without a plan, their options are:

a. **Stay Put**. It is possible to wait for friendly troops. This should be the course of action chosen if there are many enemy troops in the area and the sniper is sure that friendly troops will continue to operate in the area.

b. **Move to a Known Friendly Area**. This action should be taken only if the sniper knows the location of a friendly area and the enemy is widely scattered.

c. **Retreat into Enemy Territory**. The sniper can retreat further into enemy territory to begin guerrilla warfare. This is a short term solution only. It is chosen only if the sniper knows that the area is not an enemy stronghold, or a link up with friendly forces is likely.

132. **Killing the Enemy**. While evading capture, the sniper may have to kill an enemy soldier without drawing attention. Instead of using a pistol or rifle which will draw attention to the sniper's position, alternative silent weapons may be used such as a bayonet, garotte or club. By day or night, the successful use of silent weapons requires great skill and stealthy movement.

MOVEMENT

133. Movement may be by day or night. However, movement by day is not normally recommended., since if it is obvious it may bring you into contact with people, language, dress, or habit problems:

a. **Day**. If you have to move by day, remember:

(1) put on a bold front (look as if you have every right to be there);

(2) obtain unobtrusive clothing;

(3) keep clean;

(4) make use of any available transport (e.g. bicycles, trains);

(5) consider use of rivers; and

(6) beware of children and dogs.

b. **Night**. The best time to travel is at night. Note the following:

(1) plan routes and memorize;

(2) move on roads or tracks cautiously;

(3) cross bridges cautiously if there is no other way, but observe first (look for observation posts/sentries);

(4) avoid ridges due to sky-lining and silhouetting;

(5) determine an emergency rendezvous (ERV);

(6) avoid mud, standing crops, leaving litter;

(7) be aware of danger areas;

(8) remember, the enemy is likely to have night vision devices, so when possible use dead ground and be mindful of heat signature; and

(9) avoid aggressive action and confrontation.

LEGAL ASPECTS OF EVASION AND ESCAPE

134. It is very important that the difference between an escapee and an evader is understood. Certain acts committed by an evader are legal in the rules of war, while the same acts could result in prosecution and punishment for an escapee:

a. **Evader**:

(1) An evader is an armed combatant of a warring power who, while separated from the main fighting force, has never been captured.

(2) An evader may carry out acts of war at will, subject to the laws of land warfare. An evader has a duty to attempt to rejoin his unit.

(3) An evader who follows the laws of war may not be prosecuted as a war criminal for acts during his evasion.

b. **Escapee**:

(1) an escapee is an individual who, after becoming a prisoner of war, is attempting to elude the custody and authority of the detaining power;

(2) all military personnel have a duty to attempt to escape;

(3) an escapee, in attempting to escape, may violate domestic laws or regulations of the detaining power as long as they are violated with the sole intention of escaping and no violence against life or limb is committed;

(4) the act of wearing civilian clothes does not make an escapee a spy;

(5) an escapee may not commit acts of war, carry weapons, or engage in armed resistance; and

(6) any violation of the above can result in the loss of POW status and result in prosecution under laws of the detaining power.

135. **Escape**. If captured, the first duty must be to escape and rejoin friendly troops. The best time to escape is immediately following capture. A sniper is in the best physical and mental condition before a prolonged period of imprisonment. Additional reasons for an immediate attempt could be but are not limited to the following:

a. friendly fire or air strikes may cause enough confusion and disorder to provide a chance of escape;

b. the first guards will probably not be as well trained in handling prisoners as guards farther back;

c. the sniper may know something about the area where he was captured and may know the locations of nearby friendly units;

d. the way the sniper escapes depends on what he can think of to fit the situation;

e. prison rations are minimal and certainly are not large enough to allow for amassing large energy reserves; and

f. the only general rules are to escape early and escape when the enemy is distracted.

RESISTANCE

136. Resistance can be displayed in many forms when a sniper is in an evasion situation. Regardless of the type of resistance a sniper uses, it must be a continuing action. The main points in the rules for resisting the enemy during evasion are very simple:

a. never surrender voluntarily;

b. continue to try to escape and aid others in escaping;

c. do not accept any special favours whatsoever from captors;

d. do not tell captors that you will not attempt to escape;

e. do not do anything that might harm another prisoner;

f. give no information except name, rank, service number, and date of birth; and

g. do not answer any other questions.

137. **Contacting People in Occupied Territory**:

a. The following points should be considered:

(1) never make contact by day unless unavoidable;

(2) remember that there may be a curfew at night;

(3) if contact is made by day ensure it is not observed;

(4) a priest or doctor could be useful;

(5) remember strangers arouse suspicion and will be talked about if seen; and

(6) be patient, since if your contact is discovered he may become a POW and his family is likely to suffer the consequences.

b. **The Escape Line**. If involved in an escape line in occupied territory the sniper must remember:

(1) trust the people in the escape line, since there is little choice;

(2) recognize boredom and try to overcome it;

(3) remain fit;

(4) always plan emergency exits and reconnoitre them;

(5) discuss nothing with anyone, especially tactical information;

(6) do not get involved in intelligence and sabotage; and

(7) the mission is to escape and survive.

c. **Re-establishing Contact with Own Forces**. Re-establishing contact can be very difficult, especially if the sniper has been out of contact for an extended length of

time or has discarded uniform in favour of civilian clothes. The sniper should only:

(1) cross the enemy's lines by night;

(2) cross the area forward of own troops by night; and

(3) make contact with friendly forces by daylight.

EVADING THE TRACKING DOG

138. **Tracking Dog Training**. A tracking dog is trained to follow a specific scent to its source, and can be used with tracking teams. The team can track visually while the dog and handler follow. If the team loses the sign, then the dog takes over. A dog can track faster than a human, and a dog can track at night. A tracking dog is trained not to bark and give away the team. It is also trained to avoid baits and cover odours used to throw it off the track. Initial training consists of placing scent pads in an area, spaced every 100 to 150 m. During training these scent pads are gradually removed until the dog has only the airborne and ground scent to follow. Along with scent pad training, the tracking dog is trained in the various scents of crushed vegetation, fresh soil, and broken limbs which result from a human's passing. The dog learns to analyse all of these scents and follow the freshest. Tracking dogs have been known to follow a scent up to 48 hours old.

139. **Scent Considerations**:

a. **Body Scent**. The human body scent is produced by sweat glands in various parts of the body such as the armpits, crotch, etc. There are conditions directly related to increased scent production to which the dog will respond:

(1) rapid movement;

(2) nervous tension;

(3) types of foods,

(4) alcohol consumption; and

(5) lack of cleanliness.

b. **Artificial Scents**. Humans carry scents other than body scent. The dog can pick up on these as well:

(1) clothing (e.g. uniform, NBC suit, ghillie);

(2) deodorant;

(3) toiletry (e.g. shave cream, lotion);

(4) shoe polish, leather; and

(5) chemical aids (e.g. insect repellent, calamine lotion).

c. **Conditional Factors**. The sniper cannot control body scent, but there are situations and natural conditions that can either mask scent or exaggerate it. Masking is favourable for the sniper, and exaggeration is unfavourable:

(1) **Conditions for exaggerating scent**:

(a) vegetation, grass, ferns, etc;

(b) high humidity;

(c) forest areas;

(d) light rain, mist or fog;

(e) slow movement;

(f) carrying a heavy burden;

(g) nervousness causing excessive perspiration;

(h) travelling with a large number of persons;

(i) light winds; and

(j) still standing water, such as a swamp.

(2) **Conditions for masking scent**:

(a) distance;

(b) arid environment;

(c) no vegetation;

(d) metal surfaces, sand and stone;

(e) animal scents and tracks;

(f) irritations to the dog's nose, such as engines, factories, pollution, dust, etc;

(g) continuous evasive action causing the handler to lose confidence in dog;

(h) ploughed ground;

(i) high winds; and

(j) ice, snow, water.

140. **Throwing the Dog Off the Track by Deception**. Snipers will have a better chance to evade a dog if they are familiar with tracker dog training and capabilities. Laying several false trails will help confuse and tire the dog and handler. If the sniper can lay false tracks in heavy vegetation he can tangle the handler's lead and delay him.

141. **Avoiding Contact**. There are three methods that will generally help evade a tracking dog:

a. **Before Contact with the Enemy**. To evade the tracking dog, the sniper should use the following procedures:

(1) The rules of physical camouflage also apply to personal scent. The sniper tries to blend in with his surroundings. Alien scents attract dogs.

(2) Travel over an area already used by humans or animals.

(3) When travelling in groups, the group should occasionally split up for short distances. This will slow the dog.

(4) When preparing food, the sniper should handle containers and wrappers as little as possible. If he buries them, he should not handle the soil. He should use metal instruments or sink the material in deep water.

(5) When entering or leaving rally points, the sniper can use various routes to confuse the dog.

b. **Contact from a Distance**. If the sniper has been seen or the dog has located his track, he can evade the dog using the following procedures:

(1) Use speed and distance to tire the dog and destroy the handler's confidence.

(2) If travelling in a group, the group splits up. The dog can only follow one person at a time.

(3) The sniper should vary the surface and terrain of travel. If possible, travel on metal surfaces.

(4) Pass through fields which contain or have contained animals.

(5) If possible, cross streams or walk along streams, and leave several false entries and exits to confuse the dog.

(6) The sniper must use his imagination and be alert for possible ways to trick the dog and slow him down anyway he can.

c. **Close Contact**. If the dog is nearing a position to be released and possibly attack, the sniper should use the following procedures:

(1) get out of sight of the handler;

(2) use speed and distance to tire the dog and handler;

(3) change the direction of travel, travelling over gravel, stone, or rough surfaces;

(4) try to pass through animal trails or habitations;

(5) clear obstacles, and shed articles of clothing, food or expendable gear;

(6) if possible, part the handler from the dog; and

(7) if the dog catches up with him, the sniper must kill the dog.

REMOVING THE DOG

142. If there is a possibility that a dog may attack the sniper he pads his weak arm. This is to keep his strong hand free to remove the dog. When padding the arm, put a soft layer next to the arm, then a tough layer, and then a soft layer on the outside to give the dog something to grip. Any of the following items can be used:

a. web belt;

b. rifle sling;

c. jacket liner;

d. ghillie top;

e. poncho; and

f. poncho liner.

143. When the dog attacks, the sniper gives him his padded arm. He must give the dog a good bite the first time because if the dog misses, he will look for another target, such as the head, leg, or neck.

144. The sniper then raises the dog up on its hind legs and works the arm back and forth to keep him interested in only that arm.

145. Using a gun or knife, the sniper shoots or slashes upward into the dog's head or throat. His objective is not the dog's stomach, because the dog will live long enough with a gut wound to continue his attack.

146. The sniper should never try to stab down at the dog's head. The dog will release his grip and grab the other hand.

147. If the sniper cannot risk a shot or cannot reach his knife, he grasps the dog's windpipe and squeezes as hard as possible, cutting off the wind. The dog will release its bite trying to breathe. The sniper does not let go. He wraps his arm around the dog's head and applies pressure until he kills the dog.

148. The sniper should never try to turn and run. The dog will definitely win the race.

SURVIVAL

149. **Psychological Aspects of Survival**. In recent years, many advances have been made in the fields of survival equipment, food, and medicine. All these advances still depend on the ability of the survivor to deal with the psychological stresses that are placed upon him. Studies have demonstrated that survival information contributes to a feeling of self-confidence in one's ability to survive. Since self-confidence is important in handling fear and panic, survival information should serve to minimize fear and prevent panic.

150. **Fear**. Fear is a very normal reaction for anyone faced with an emergency which threatens our most important needs. Fear influences our behaviour and thus our chances for survival. However there is always something that can be done to improve a situation. The sniper learns to accept fear and use it for positive behaviour:

a. **Factors which increase Fear**:

(1) helplessness; and

(2) hopelessness.

b. **Factors which defeat Fear**:

(1) confidence in equipment;

(2) confidence in technical ability; and

(3) concentrating on the job to be accomplished.

151. **Enemies to Survival**. The old saying “knowing your enemy” applies even in a survival situation. The “enemies” to a sniper's survival are best conquered by confronting them. Once a sniper realizes that they exist, he can learn to live with them. Each enemy to survival is dangerous because it can affect the mind of the sniper. The physical and psychological effects of trying to survive can numb one's ability to think clearly:

a. **Pain**. Pain is nature's way of letting a person know something is wrong. But nature also has ways of suppressing pain if one is too busy to pay attention to an injury. Pain may go unnoticed if the mind is occupied with survival plans. On

the other hand, once a sniper gives in to pain, it weakens the will to survive. Pain will get to the best sniper if it is allowed to, even if the pain is not serious or prolonged. One of the most effective means of overcoming pain is to keep hopes up and keep busy.

b. **Cold**. Cold is a much greater threat to survival than it sounds. It not only affects the ability to think clearly, but it also tends to reduce the will to do anything but get warm. Cold is a treacherous enemy, because as it numbs the mind and the body it also numbs the will. Since it is hard to move and the desire to sleep increases, it is easy to forget the fundamental goals of survival.

c. **Thirst**. Even when thirst is not extreme, it can dull the mind. As with pain and cold, thirst can almost be forgotten if the will to survive is strong enough. It is also important to remember not to deprive oneself unnecessarily of water. Serious dehydration may occur in a survival situation even when there is plenty of water available.

d. **Hunger**. Hunger is dangerous because of the effects it can have on the mind, primarily in lessening the person's ability for rational thought. Both thirst and hunger increase a person's susceptibility to the weakening effects of cold and fear.

e. **Fatigue**. Even a moderate amount of fatigue can markedly reduce mental ability. Fatigue can cause carelessness and it becomes increasingly easy to adopt a feeling of just not caring. This is one of the biggest dangers in survival. Certainly there may be a real danger in over-exertion, but fatigue may actually be due to hopelessness, lack of a goal, dissatisfaction, frustration, or boredom. Fatigue may represent an escape from a situation which has become too difficult. If the sniper recognizes the dangers of a situation, he can often summon the strength to go on.

f. **Boredom and Loneliness**. Boredom and loneliness are two of the toughest enemies of survival, primarily because they are unexpected. Feelings of boredom and loneliness can creep up on the sniper when nothing happens, when something is expected and does not happen, or when the sniper must stay still, quiet, and alone.

152. **Attitudes for Survival**. While some attitudes are actually essential to survival, there are others which greatly lessen the chance for survival. For example, the mental attitude that “it can't happen to me” can blind one to the reality of the situation and make appropriate reaction in an emergency impossible.

153. Much of the available evidence demonstrates the importance of having a “preparatory attitude” for whatever emergency may occur. Survival instructions given through posters, movies, lectures, etc., have been found to produce preparatory attitudes for survival which later serve as guides to action. Either general or specific information may serve this purpose. Often knowledge of the experience of others has also served as preparation for action.

154. The most frequently encountered attitude endangering survival is the “it can't happen to me” attitude. This is the opposite of the preparatory attitude. Failure to have an attitude for

survival may result in panic, even in persons who appear to be extremely calm under normal conditions.

155. **Personality Requirements for Survival**. Survival may depend more upon personality than upon the danger, weather, terrain or nature of the emergency. Whether fear will lead to panic or act as a spur to greater sharpness, whether fatigue will overcome the person or motivate the sniper to take the necessary action to survive, are all, to a large extent, dependent more on the person than the situation. Qualities important for the sniper's survival include:

a. Decisiveness.

b. Ability to improvise.

c. Ability to live with himself. Some people cannot stand to be alone.

d. Ability to adapt to any situation.

e. Ability to keep calm, cool and collected.

f. High degree of patience.

SURVIVAL TRAINING

156. **Training**. Unit Master Snipers should conduct evasion and survival exercises to enable the sniper to train for such situations. Out of service courses at allied training establishments are also available and provide excellent and realistic training value.

157. **Individual Survival Kit**. Vital to the sniper's survival training is the preparation of an individual survival kit. If faced with a survival situation, the contents of even the smallest kit will be invaluable:

a. **Consider the Mission**. Before preparing a survival kit, the sniper must consider the mission and the operating environment;

b. **Carrying Kit**. The sniper should get into the habit of carrying a kit of some kind everywhere he goes. The sniper can carry a small kit on his person, a little larger one on his web belt, and a fairly well stocked kit in his pack. A survival kit does not need an elaborate case and contents. It does need to have items that are functional and that will meet the sniper's needs:

(1) The container selected should provide:

(a) water repellence;

(b) ease of carrying;

(c) ability to accept components of different size and shapes; and

(d) durability.

(2) Examples are a military issue first aid case, an ammunition pouch, or an empty smoke grenade canister.

c. **Selecting Items**. Items should be selected that can perform more than one function and provide the most flexibility:

(1) Every kit should contain the following:

(a) first aid items;

(b) signalling items;

(c) water;

(d) fire starters;

(e) food;

(f) shelter items; and

(g) money of country you expect to be operating in.

(2) Suggested items for a compact individual survival kit include:

(a) Flint and steel.

(b) Snare wire.

(c) Rotenone if possible or other commercial fish poison.

(d) Signal mirror.

(e) Wrist compass.

(f) Fishing line (18 kg test).

(g) Fish hooks.

(h) Matches in waterproof container.

(i) Tallow candle.

(j) Wire saw.

(k) Oxytetracycline or similar pills for infections.

(l) Three cornered file.

(m) Heavy duty needles.

(n) Commercial broad head. This can be threaded onto the end of a cleaning rod to be used as a spear.

(o) Coloured yarn.

(p) Salt tablets.

(q) Plastic bags.

(r) Chapstick.

(s) Condoms can be used for water storage, for keeping tinder dry, as a waterproof cover for wounds, etc.

(t) Money for a wartime kit should include enough to bribe, buy food, etc.

SECTION 10
TARGET ANALYSIS

INTRODUCTION

158. Target Analysis is the process used to locate, isolate, and identify a specific target. The process not only locates and isolates the target, but also helps identify the weaknesses that may expose that target to direct interdiction. The process applies to personnel targets as well as materiel targets. Target analysis is all of the analysis and planning that applies directly to actions on the objective.

159. Materiel Neutralization against most targets is intended as a pre-emptive measure. For example, Materiel Neutralization teams could infiltrate a target country to engage surface-to-surface missiles with suppressed .50 calibre rifles Due to noise around the missile site impacts on a critical part of the missile are not immediately observed. Teams achieve a clean getaway having made the missiles incapable of striking their intended targets. The engines may light, missiles may leave their launchers, but they will not hit with precision.

160. The following material is intended to introduce the sniper to the methods of locating, identifying, fixing, and analyzing targets. For example, just part of an entire complex may be identified for attack by one rifle shot. Many target complexes can be attacked using the LRSW at standoff ranges of 1,000 m or more with minimal collateral damage due to the rifle shot.

DEFINITIONS AND TERMINOLOGY

161. Terminology and definitions associated with target analysis must be understood before examining the analysis process itself:

a. **Targets**. Anything of military, economic, political or psychological value that has been identified for an attack for the purposes of destruction, degradation, removal, or surveillance.

b. **Target Systems**. A network of major systems that include many targets within them that, when attacked, will delay or end the functional capability of the target system. Examples of target systems include:

(1) railway;

(2) fuel production;

(3) mass telecommunications; or

(4) air transportation.

c. **Target Sub-systems**. A major part of the target system. For example, within a fuel production target system, sub-systems include distribution networks, refineries, fuel terminals and different modes of physical transportation.

d. **Target Complexes**. Major complexes that are a part of a target system. Target complexes will have a number of individual targets within them in the same geographical location. For example, within a fuel production target system a refinery is a large target complex.

e. **Target Components**. Individual targets that may be attacked within the target complex. A component is any piece of machinery, structure or productive asset that contributes to the operation or output of the complex. When it applies to sniping human targets, the target component is the sole target and usually stands alone from the target system, sub-system, or complex. To look at this in an abstract way, an enemy officer is a target component of the overall target complex of enemy personnel within an army.

f. **Standard Atmospheric Conditions (SAC)**. All ballistic tables are based on standard atmospheric conditions. The SAC are as follows:

(1) air temperature 15ºC (59 F);

(2) barometric pressure at sea level 1000 millibars (29.53 in Hg);

(3) 0 m altitude above sea level (ASL);

(4) ammunition temperature 21ºC (70 F); and

(5) the G1 drag function.

ANALYSIS

162. **Carver Matrix.** The Carver Matrix is a method used to identify a target for attack. It identifies a series of targets within a system, sub-system or complex and rates those identified targets in six different categories:

a. **Criticality**. This rates how critical the selected component is to the system, sub-system or complex. At a strategic level, it rates the enemy's ability to wage war. For example for a Materiel Neutralization team assessing the different components of a missile battery, looking for the most critical and easily attacked target to shut down the battery demonstrates criticality. Thus a radar guidance van, crucial to a surface-to-air missile battery's ability to attack air targets, is very critical to the function of the entire missile site. The criticality of a target depends on several factors:

(1) **Once the target is attacked, how much time will it take the effect to be felt on the target**? This will depend greatly on the method of attack. For example, a vehicle destroyed by adding different chemicals to the oil system will take a lot longer to show an effect than if explosives are used.

(2) **What level of damage is desired on the target**? Should it be completely destroyed or only taken out of action long enough for another event to take place? By completely destroying something, there may be a greater effect on local inhabitants sympathetic to the attacker's cause.

(3) **If this particular target is removed, what is the possibility that other similar systems will be able to fill the gap caused by destroying the target**? For example, shooting the windscreens out of a single aircraft when there are three others sitting nearby achieves very little.

(4) **What are the number of targets and their function(s) in the overall target system, sub-system or complex**?

b. **Accessibility**. Snipers view accessibility somewhat differently than do ground forces conducting a normal attack. A target is normally accessible when individuals or a unit can enter the facility and gain access to that target. For a Materiel Neutralization team, accessibility may mean "Is the target within weapon range from the nearest position that allows snipers to enter and exit safely and without detection?" This will depend greatly on enemy activity and weather conditions in the target area. These conditions will assist in determining if the team is going to have to be closer or can be farther away to take the shot(s) necessary. Unfortunately countermeasures may be employed in the target area that will affect sniper movement until the shot is taken. Counter-sniper measures/considerations that may affect accessibility to an area are:

(1) Enemy patrols out to 2 km around the target area.

(2) Fine wire mesh fences situated around the target area which are high enough to affect bullet strike.

(3) The use of laser detectors to detect laser range finders and laser target designators. The surface material of a target can be made to be laser-resistant.

(4) Physical barriers that will interdict long range rifle fire.

(5) Known sniper detection systems such as the Rafael that can detect a bullet in flight and identify the sniper location.

c. **Recoverability**. Once you neutralize the specified target, how long will it take to replace that system, if it can be replaced at all? For operations against human targets, recoverability of that target is usually determined at much higher levels than a sniper team may ever know. For materiel neutralization, targets that can be engaged by rifles usually have a shorter recoverability time. This means that their designated "down time" is shorter. Some systems can be taken out completely by rifle fire (missile and fuel systems, etc). The required down time is a major determining factor in considering the recoverability of a target.

d. **Vulnerability**. This is the element of the analysis that determines how vulnerable the target is to rifle fire attack. Is the target armoured? Do the rounds fired from the .50 calibre rifle have the energy to penetrate the target? Do they have sufficient power to damage the target once it is penetrated? Does the team have sufficient firepower to neutralize the target?

e. **Effect of the Population**. Television is one of the greatest means that we can use to understand the effect on people' views of military activities around them. The precision of the LRSW when carrying out anti-materiel missions should mean there will be little to no collateral damage. This may not always be the case. Each target's attack potential must have this factor weighed in. Some other questions that may present themselves are: Are terrorist reprisals possible? What will be the immediate reaction of the local populace? Many questions are considered at a higher level than the operator, however, to increase sniper survivability in the event the local population may be required to assist in escape or evasion these questions should be considered.

f. **Ability to Recognise ("Recognizability")**. The more complex and busy things are around the specified target, the more difficult it may be to recognize. If H-Hour will be during the hours of darkness, how well can night vision systems assist seeing the intended target? Snipers may have to determine in rehearsal, under conditions as close as possible to target area conditions, the capability of their night vision systems to see similar targets at night. When the target is an aircraft, how easy is it to see or place a crosshair on the intended point of attack, from differing angles, across hot tarmac with heat waves, or in fog or ground

haze? Snipers may have more of a problem with this in complex sites because they cannot conduct close reconnaissance on the target.

163. A Carver Matrix is developed to isolate and assign values to the above six factors. The matrix may range from one that is very simple and direct, to a complex one that examines a target from target system all the way down the chain to the individual target. Snipers that are going to raid a target as a direct action will analyze the target all the way from the top of the chain. If the mission is to take out a power plant, for example, they may analyze the fuel system that supplies that plant to see if it is vulnerable to contamination that will destroy the engine or turbine that makes the power. If they can destroy the power plant without directly entering it, they are in much less danger. Target "down time" is a great part of this determination process.

164. For a Materiel Neutralization team, the attack is going to be more direct. Almost always, they will attack the intended target directly and not somewhere higher up its targeting chain. The reason that snipers are being used is because it is an immediate threat and planning may be only allotted one day or a few hours. Even when the target is a single missile, the Carver Matrix is used to analyze the threat and situation in the area surrounding the target. Through this analysis you may reveal danger spots or vulnerabilities in your own methods. For sniper operations, use the Carver Matrix to not only analyze a single target, but to analyze everything in the target area. Include the target, the threat, avenues of approach to a final firing position, and avenues of escape. DO NOT limit the analysis to only the target itself.

165. This analysis also keeps snipers from over-focusing on the specified target itself and ignoring other problems in the area. In cases where the mission may be to shut down a complex with multiple targets, the team will list all targets along one side of the matrix sheet. Criteria for evaluating each Carver factor must be developed. Time may be used as a factor for Criticality. If for example destroying a component results in the total loss function of a missile site, then that component is very critical. If the missiles can be replaced by the supply system before the attack may occur, that particular component is not as critical. This also ties into Recoverability.

166. Once the evaluation criteria have been established, use a number rating system to rank the factors. This may be from 1 to 5 or 1 to 10. The higher the number, the more desirable that factor is to the team. In the example below, a number "5" assigned to the Radar Control Van indicates that it is the most critical target on the target list. The numbers correspondingly go down in value for the less critical components on the missile site. Some types of target complexes have targets that are not located in that specific geographical location. An anti-aircraft missile site may have a look-down radar placed on a piece of high ground designed to deny enemy aircraft a certain low-level approach route. By removing this radar site, the team will remove that site's shoot-down capability even though the missiles are intact. The remote radar sight, by being on the high ground, may be much more vulnerable than the missile site itself.

167. You must carefully consider your evaluation criteria and select measurable, quantified criteria to the maximum possible extent. Apply these criteria vigorously and be objective. Do not allow subjectivity to enter into the evaluation process. As individual targets are weighed for their six factors, enter the number value assigned to it. It does not matter if you do all six factors for each target or do a factor (criticality for example) for all six targets before moving on to the

next factor. Once all of the data is filled, add the totals for the six factors for each target component. Attack first the components with the highest value. As time and your mission permits, attack each target in order descending from the highest value to the lowest.

EXAMPLE OF A CARVER ANALYSIS

168. The following example of the Carver analysis process for an anti-aircraft missile site uses a 1 to 5 rating system (items that cannot be determined are given a 2 value).

a. **Criticality**:

(1) single volley will make the site a non-threat to Allied aircraft, Value 5;

(2) single volley will reduce the site's anti-aircraft capability, Value 3; and

(3) single volley will have an unknown effect on the site, Value 1.

b. **Accessibility**:

(1) target is of sufficient size to allow maximum standoff under SAC, Value 5;

(2) target must be engaged under 1,000 m due to size of component, Value 3; and

(3) target must be engaged at under 600 m due to size of component, Value 1.

c. **Recoverability**:

(1) elimination of the component **will** shut down site for 6 hours, Value 5;

(2) elimination of the component **may** shut down site for 6 hours, Value 3; and

(3) effects of elimination on the target's ability to shoot down Allied aircraft are unknown, Value 1.

d. **Vulnerability**:

(1) component is destroyed with a single shot, Value 5;

(2) component is destroyed with two volleys of shots, Value 4;

(3) component is destroyed only when visible detonation occurs, Value 3; and

(4) effect of shots on target is unknown, Value 2.

e. **Effect on the Population**:

(1) no effect on the local population, Value - 5;

(2) possible reprisals against local population due to guerrilla activity, Value 3; and

(3) reprisals against local population likely due to local guerrilla activity, Value 1.

f. **Ability to Recognise (“Recognizability”)**:

(1) target component is easily recognized with night vision devices under less than 30% illumination, Value 5;

(2) target identification at night is dependent on active IR illumination of the target, Value 3; and

(3) target must be in 100% illumination or daylight to be identified, Value 1.

NOTE

The missile is a ground mounted export version of the SA-11 Gadfly (low to medium altitude missile system). Missile size is 40 cm diameter by 5.6 m long.

169. The Material Neutralization team task is to render a surface-to-air missile site a non-threat to Allied aircraft that are going to penetrate through its airspace. Following the team’s mission analysis and mission statement, the following constraints, limitations and facts are identified:

a. Eliminate the site as a threat to Allied aircraft for a period of 6 hours at a specified date/time group. Down time window is 3 hours either side of 182400Z AUG 05 (i.e. from 2100 hrs 18 Aug 05 to 0300 hrs 19 Aug 05). Earliest down time is 2100 hours.

b. Minimize loss of life at the target location.

c. Missiles are small and are carried on vehicles in armoured launchers, but are controlled by a remote radar van with automatic shoot capabilities. The remote van is located approximately 3 km away at the entrance to a valley that Allied aircraft intend to use.

d. Avoid disclosing to the enemy the nationality of this mission.

e. The site has the capability to shoot down aircraft on its own but must receive permission from its higher HQ to execute. Communications with HQ is absolutely essential for this site to engage aircraft.

f. Enemy site security consists of a section (+) of infantry. They are equipped with small arms and a platoon support weapons package. Their strength is estimated at

14 personnel. An NCO whose capabilities are unknown leads them. Their military structure does not encourage initiative or independent action.

CARVER MATRIX ON SURFACE-TO-AIR MISSILE SITE							
Targets in Complex	Criticality	Accessibility	Recoverability	Vulnerability	Effect on Populace	Recognizability	Total
Individual Missiles	5	1	3	5	5	5	24
Radar Control Van	5	5	5	4	5	5	29
Communications Van	4	2 N/D	1	2 N/D	5	2	17
Command & Control Van	5	2 N/D	2 N/D	2 N/D	5	2 N/D	22
Fuel Trucks	2	5	3	5	5	5	25

Figure 5-7: Carver Matrix

170. **Analysis of Target Components**. This analysis assumes that the target will be attacked with .50 calibre sniper rifles only. It is based on a configuration of two teams each of three men, with a LRSW with each team. They have Generation II night vision sights on their rifles and observation systems. The analysis that follows looks at all six factors for one target component at a time.

171. **Individual Missiles Target**:

a. **Criticality**. Without question, the missiles themselves are critical to the function of this missile site. If the missiles were all rendered useless, the site would be out of action. Value 5.

b. **Accessibility**. The missiles are clearly visible and are not blocked by line of sight. There are two other problems though. First, they are in armoured boxes, and even using Mark 211, Mod-0 ammunition will not guarantee that the bullet will cause critical damage after the box is struck. Second, the missile is such a small diameter (45 cm) that snipers will have to be within 600 m to accurately strike the missile, even if it were exposed. Value 1.

c. **Recoverability**. The unit can replace the destroyed remote missile launchers within 6 to 10 hours of their removal. Comparing this and the time criteria, a value of 3 is assigned.

d. **Vulnerability**. The missile when struck is rendered useless with a single shot. Value 5.

e. **Effect on the Population**. There is no guerrilla activity in the target country and no reprisals are expected against the local civilian population. Value 5.

f. **Ability to Recognise ("Recognizability")**. The missile launcher sits on top of a mobile towed launcher assembly and is very recognizable under almost anything but total blackout illumination. Expected weather is illumination 88% with clear skies. Value 5.

172. **Remote Radar Control Van Target**:

a. **Criticality**. The remote radar site is very critical to the operation of the missile site. The radar locates, identifies, tracks, and orders missile launch. Without the radar site, the missiles are useless and cannot independently track and shoot down aircraft. As a stand-alone single entity, the radar is the most critical component. Value 5.

b. **Accessibility**. Value 5 because of its remoteness and location on high terrain. After the team does a map check they find that they can engage this target from neighbouring high terrain from only 1,400 m away. There is a river between them and the target, which will impede enemy security forces.

c. **Recoverability**. Radars are much more expensive and harder to replace than missiles. The intelligence estimate is that this component could not be replaced for 7 to 10 days after its destruction. Value 5.

d. **Vulnerability**. Radars cannot be destroyed with only a shot to the dish. A specific component of that dish must be engaged, and the van it is sitting on is easier to attack. The team has information that shows the specific points of attack on the outside of the van. The vehicle is only light-skinned. It is estimated that a couple of volleys of shots would be needed to take the target out of action. Value 4.

e. **Effect on the Population**. The same considerations apply as in the missile component analysis. Value 5.

f. **Ability to Recognise ("Recognizability")**. The radar van is easily recognized for three major reasons. First, the type of radar has been identified and photos of it are available to the team. Second, it is in a remote location and is the only vehicle in the area with a radar on it, which eliminates the need to identify a specific target from a number of others. Third, the target is standing on high ground and is silhouetted with 88% illumination in the target area. Value 5.

173. **Communications Van Target**:

a. **Criticality**. The site must have authority from its headquarters to engage targets. The communications van is therefore very critical to the site. An independent site officer can still order launch however if he feels the threat is high enough to

warrant not obtaining headquarters authorization. **This human factor cannot be controlled so an initial value of 5 is downgraded**. Value 4.

b. **Accessibility**. This factor cannot be applied without carefully applying criteria presented earlier. The van is large and easy to find but this does not mean it is easily accessed. Intelligence on the target is not good enough to identify the specific point on the communications van that snipers must engage. Therefore, they cannot determine their maximum standoff range based on the size of the target. This component is assessed a 2 N/D (Non determined), meaning the value cannot be accurately assessed without better target data.

c. **Recoverability**. Communications are easier to re-establish than radar. The type of communications used is unknown, though planners can get a good idea based on the range to the nearest command and control site. The site may have a backup radio system that has not yet been identified. Based on the visual appearance of the van, the replacement of this van may take longer than 6 hours, but in reality is not determinable. Value 1.

d. **Vulnerability**. The communications van itself is vulnerable to attack by rifle fire. Components inside may be armoured, however, or they may be difficult to hit and taken out of action. Value 2 N/D.

e. **Effect on the Population**. Value 5 as for previous target components.

f. **Ability to Recognise ("Recognizability")**. The team has no imagery on what this communications van looks like. It may be any type of vehicle and the only identifying feature may be the additional antennas. At night with 88% illumination, these antennas may not resolve in the night vision systems the team is using. Through night vision devices the van may appear as any other type of service van on site. Value 2.

174. **Command And Control Van Target**:

a. **Criticality**. The command and control van is necessary to site operation because it is likely shoot down orders will come from there. Depending on the data link between the missiles, the radar, and the command and control van, removal of this component from the target complex may be a good way to shut down the site. However, killing the commander of the site or severing a data link is no guarantee that the site cannot function. Value 5.

b. **Accessibility**. The team has no specific data on the location of the command and control van, nor its appearance. Through careful observation the team may be able to determine which is the command and control van, however the specified target within the van cannot be determined and standoff range cannot be established. Value 2 N/D.

c. **Ability to Recognise ("Recognizability")**. The actual configuration of the command and control van is unknown. In reality, there may be no actual

command and control van, since the enemy may use a combination of the communications van and key personnel that roam around. Therefore, replacement of the van may either be critical or may have no effect. How long the system would be shut down, or take to repair or replace, if required at all, cannot be determined. Value 2 N/D.

d. **Vulnerability**. This target's vulnerability is difficult to assess without more knowledge of its configuration, or if it exists at all. Value 2 N/D.

e. **Effect on the Population**. Value 5 as for previous target components.

f. **Ability to Recognise ("Recognizability")**. The command and control van may be either easily recognized or it may not exist at all. Value 2 N/D.

175. **Fuel Trucks Target**:

a. **Criticality**. The fuel trucks themselves are not necessarily critical to running the missile site. They do provide fuel to run the generators that power the launchers. The fuel trucks also provide an alternate means of destroying the missile launchers because of their close proximity to the launcher assemblies. One problem with attacking fuel is that the chances of loss of life at the target area are much greater than with any other mode of attack. This may be considered as an alternate destruction method. Value 2.

b. **Accessibility**. The fuel trucks are easily accessible. The generators for the missile launchers run on gasoline while the vehicles at the site run on diesel fuel. Any incendiary ammunition can be used to ignite fuel. Incendiaries are more effective on gasoline, with spectacular results, but are not nearly as good against diesel fuel containers. The target is easily large enough to engage from maximum standoff and perhaps even with a subsonic range attack. Value 5.

c. **Recoverability**. Fuel trucks are easily recoverable provided that the fire stops or is put out. Failing this, fuel trucks are simple to replace. The recoverability aspect however cannot be considered in isolation because collateral damage may result in the target area, e.g. burning fuel may set off munitions and cause significant damage, thus there could be little point in bringing in new fuel trucks. Due to the risk of significant collateral damage, recoverability is assigned Value 3.

d. **Vulnerability**. The fuel trucks are extremely vulnerable to attack by .50 calibre rifle. The gasoline tanks are more at risk than the diesel tanks, but a single shot should ignite the fuel cells. Value 5.

e. **Effect on the Population**. Value 5 as for previous target components.

f. **Ability to Recognise ("Recognizability")**. The fuel cells are the most easily recognized target component on the site, with the possible exception of the

missiles themselves. The fuel tanks are large enough to be seen at extreme range with Generation II night vision optics even under limited visibility. Value 5.

176. The target component receiving the highest total value on the Carver Matrix is the radar control van. At this point, the sniper should stand back and take a good common-sense look at the results of the analysis. In this example, target components fell out in a reasonably sensible priority of attack, as follows:

a. remote radar targeting acquisition and tracking radar;

b. fuel trucks at the missile site;

c. individual missiles in their launchers;

d. command and control van or key officer in charge; and

e. communication van.

177. Completing a Carver Matrix on a surface-to-air missile site thus leads the sniper to conclude that the remote radar site is the attack priority. This makes good tactical sense as the van is remotely located and has minimal security. The Materiel Neutralization team will operate away from the more heavily guarded missile site itself. Single engagement within a Target Complex will increase sniper survivability, however a secondary target may have to be engaged to ensure destruction/neutralization of the target for the required length of time. Certain engagement criteria may include that no enemy personnel be within 50 feet of the fuel cell when the shot is taken.

PRINCIPLES OF TARGET ATTACK ON MATERIEL TARGETS

178. Normal principles of attack were developed with the idea that an assaulting force is likely to go on a target to destroy it. With a Materiel Neutralization team, the specific intent is **NOT** to go on the target. Some of the following principles of attack will be discussed using the example just presented for the Carver Matrix :

a. **Attack Special Target Components**. For obvious reasons, attack the more specialized components that are harder to replace. This must be weighed against the level of destruction requirements. In the example mission, the radar van was attacked for a number of reasons, primarily its accessibility and that radar is the most specialized piece of equipment on site. Ancillary reasons were its remote location, its ease of recognition, and the vulnerability of the target to attack.

b. **Permanent Damage to the Selected Target**. Permanent damage should be achieved when appropriate and practicable. In the example mission the direction given was to neutralize the site for a 6 hour window. There was no prohibition on inflicting more permanent damage. Thus if the radar was attacked and disabled, and the fuel trucks were engaged and destroyed as a secondary target, it is likely that the site would be completely damaged, requiring a total rebuild. The level of

damage required is directly tied to the principle of achieving permanent damage where possible.

c. **Damage to Selected Components that Prevents Cannibalization**. If the team had elected to attack missile components only it is possible that some components may have been cannibalized and moved to other launchers, and the system pieced together enough to attack aircraft exiting the target area. By attacking and neutralizing the radar van, a stand-alone component, the enemy cannot cannibalize to bring the site back into action. (Note in the example mission cannibalization would not normally be a factor. Our aircraft would return another way, as different ingress and egress routes are normal practice, and thus would not be in this site's engagement sector. Thus if snipers achieve 6 hours neutralization on this one site, covering the ingress route, cannibalization would not be a factor.)

d. **Attack Cast Metals where Possible**. Cast metals are more brittle and are more easily cracked. This is a factor if the launcher boxes were to be attacked as many launcher boxes are constructed of cast metals. This principle is not a factor in this target analysis.

e. **Attack the Driven Machine**. When attacking certain types of targets avoid attacking the vehicle that is pulling the piece of equipment/launcher. The "driving machines" are usually standard prime movers which can easily be replaced. The "driven machine" on the other hand may be able to be moved by anything with enough power to do so. This principle has its roots in point target assault operations, where a team will enter a facility to take out a target. An example of this is taking out a specialized rock crusher in a refinery as opposed to the engine that is driving the crusher. Any engine may be adapted within a day or two to get the crusher up and running again. However, if the crusher or a critical component of that crusher is neutralized the down time will be much longer.

f. **When Possible, Cause the Target to Self-destruct**. A good example of this is the attack on a missile with a solid fuel booster. Through their target analysis the team finds that the missile target is a solid fuel system. They select ball ammunition because this round will not cause a sympathetic detonation of the entire missile. The team may choose to use a suppressed rifle to shoot a ball round through the solid fuel cell of the rocket. They time this with generator noise and the activity that is taking place around the rocket. The enemy soldiers on site do not detect the shot for a combination of reasons. This shot may be detected by later inspection or it may not. Soldiers in general are always inspecting their kit, but many third world countries are not so diligent. At a minimum, weather conditions and time will contaminate the fuel, which may thus fail to ignite at the time of launch. In the best case, when the exploding fuel reaches the breach point in the cell, the entire missile will go up in a spectacular blast. When a team successfully engages a target that does not immediately and obviously explode, they increase their chance of survivability.

MISSION/TARGET ANALYSIS OF THE SHOOTING PROBLEM

179. For the example mission used for the Carver analysis, the Materiel Neutralization team has plotted the layout of the missile site (see Figure 5-7). New information came after the team did their Carver matrix on this target, indicating that the missile launchers are **NOT** located together. The fuel tank's destruction thus will not result in the destruction of the missile launchers, further reinforcing the team's decision to attack the remote radar site. The physical location and distance between the launchers almost eliminates the possibility of the team shooting the missiles. Based on this information, the team can now analyze the shooting situation.

180. Based on the tactical and terrain situation alone, the team has selected four possible shooting positions (A through D). The team will apply their weather intelligence to these possible shooting solutions to determine if they are within the necessary range to engage the designated target with the precision necessary to reduce it. By examining Figure 5-7 the team can check out ranges to the targets from the different shooting positions. Two teams are available for this task. Teams may co-locate in one position or choose to engage from separate positions. For the purpose of this example they are co-located. At this time, the team must gather its weather intelligence and begin to assess the validity of their selected positions. The predicted meteorological and environmental conditions and ammunition data for this area at the mission execution times are as follows:

a. **Slant Angle to Target**. Less than 1º to the target from any one of the four possible positions;

b. **Predicted Barometric Pressure**. 854 millibars (25.22 in Hg;)

c. **Predicted Air Temperature**. 32 C (90ºF;)

d. **Planned ammunition temperature based on ambient air temperature**. 32 C (90ºF;)

e. **Ammunition to Use**. Armoured piercing and armoured piercing incendiary; and

f. **Weapons System**. LRSW.

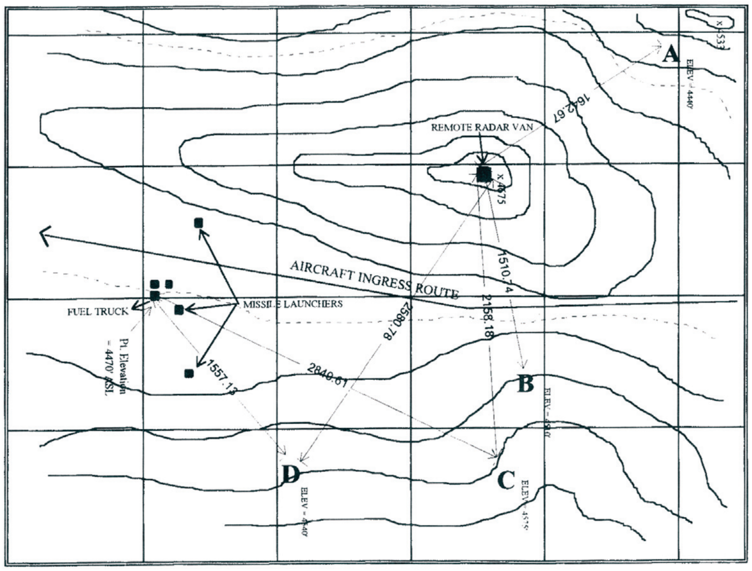


Figure 5-8: Terrain Situation

181. The team now calculates shooting data based on the above conditions. They use this data to assess the validity of these positions based on the shooting environment. You can see the progression of the analysis. First, the team selected possible positions based on terrain and the enemy situation. They nominated four possible shooting positions. These were selected regardless of range to the target, ammunition, and meteorological and environmental conditions. The team used a GPS/Vector LRF to determine the range to the target by entering the grid coordinates into the GPS for the shooting positions and for the target itself. The GPS gives horizontal range to the target. The elevations for these targets were provided with the imagery intelligence provided to the team. The only problem with this analysis is that sites selected by the team in planning may not work at all once on the ground. Examining each of the four positions, the shooting analysis breaks down as follows:

a. **Position A to Radar Van Target**. This site was selected as the best tactical position to use because the location is isolated from the missile site itself. The team can engage the radar van from here without directly alerting security at the missile site. This gives more distance between the team and the enemy, and a better escape route. The range to the target is 1,642.67 m. The team has chosen to engage with AP and API ammunition. The API causes more damage because of its incendiary projectile. The elevation setting for LRSW is +74.00 MOA. The range at which the bullet is going to go subsonic is 1,550 m. Note that this is about 92 m short of the target. API ammunition sometimes does not ignite when the bullet is in subsonic flight. This creates a problem if the team is going to engage with Mark 211, Mod-0 ammunition. In the special operations planning environment, a request for information is now sent to an agency with more information on these vans. This data once received will be included in the final analysis.

b. **Position B to Radar Van Target**. This position was selected as the second best position. It is located closer to the radar site at a range of 1,510.74 m. The team's relatively close proximity to the missile site is a concern, since this position is located a little more than 2,800 m from the missile site. Security patrols may patrol out this far, but their strength is small and they would only be able to patrol that far every few days if they are doing a pattern around the target area. This site is a little less secure for the team, but not much less than site A. The team's other concern about B is that the team's infiltration landing zone is northwest of position A. The team would have to move around the radar van site, skirting it by a couple of kilometres to avoid detection. This would add about 3 to 4 km to the team's movement distance. The elevation setting for Mark 211, Mod-0 is 63.75 MOA. The supersonic burnout range is just shy of 1,350 m. The team and analysts are confident that the round would strike supersonic and detonate correctly against the radar van. From a shooting point of view, this position offers the best chance of success so far.

c. **Position C to Radar Van Target**. This position was chosen as a fallback position to B in the event that line-of-sight is bad due to the lower elevation of B. The position is located at nearly the same altitude as the target. This cuts down on the little "glitches" that can occur when the gun is above or below target elevation. As corrections are made for meteorological and environmental conditions, elevation settings for positions that are above or below a target will have a little error in them. This is because of the fluctuation in barometric pressure of the differing altitudes. This position is located 2,158.18 m from the radar van target. Clearly, this eliminates Mark 211, Mod-0 ammunition from the engagement, therefore making this position unacceptable.

d. **Position D to Fuel Truck and Command and Control Target**. This position was selected because it is the best location to attack any targets at the missile site itself. If for any reason the team cannot attack the radar van, they will use this position to attack target components at the launch site itself. The team will engage the fuel trucks, communications van, and any missile components exposed to reduce the target's ability to shoot down our aircraft. The range to the center of the target site is 1,557.13 m. The elevation setting for Mark 211, Mod-0 is 69.25 MOA. This location as plotted puts the center of the target components just out of the supersonic range of the bullet after corrections. The team has the option on the ground of moving about 100 m closer. This will give them the range they need to use the Mark 211, Mod-0 round. The fuel truck is a larger target, however, and if they had to engage this target from a range of 1,557 m, they would strike it, but the explosive cartridge may not detonate because of its impact velocity. Final Analysis.

NOTE

In all of the above situations, the team may elect to move closer to ensure the Mark 211, Mod-0 bullet arrives at the target at a velocity greater than 1,125 fps. Mission planning on paper before deployment may not apply at all once on the ground. The biggest factor in the positions being used is line of sight to the target. The team will have to move a little left and right, in or out, to get line of sight to the target. They will then determine range to the target, obtaining current meteorological and environmental conditions and applying corrections to the elevation settings.

FINAL ANALYSIS

182. This final analysis is the part of the mission planning that becomes the "Actions on the Objective" for the team's 5 paragraph operations order. The team will use a planning cell within its own team to do the target analysis and actions on the objective part of the overall planning. Once this planning cell completes its analysis and course of action, they will present it to the rest of the team. The team always has the option to "frag" the plan on the ground. Meteorological and environmental conditions may change enough to allow the team to shoot from position A. For example, pressure may drop some more, or air temperature may go up, also raising ammunition temperature. A combination of these gains may keep the Mark 211, Mod-0 bullet supersonic all the way to the target. That call will be made on the ground.

183. The team's priority final firing position is going to be position B. The engagement range of 1,510 m ensures that the Mark 211, Mod-0 round will do the desired level of damage to the radar van. From this position, there will be no attack on any other targets in the target complex (fuel trucks, communications van and/or missiles). If the team has to fall back position D will become the team's priority final firing position. The range is a little farther at 1,557 m, but one of the targets is the larger fuel tanker. This is likely to cause collateral damage to the other components in the target area. The risk to the team increases as more rounds have to be fired and the team has to move away from position B.

184. The target analysis phase of mission planning deserves special attention. Within a team, a separate planning cell is set up to take care of this phase of the planning. That cell will do detailed target analysis and develop courses of action for executing the mission. The important point to remember is redundant planning, with contingencies for everything, and backups for those. Remember, that phase of planning where the team makes a faulty assumption will result in their mission ending in a running game called Escape and Recovery. In closing, remember a plan is only a plan. Always try to plan the execution and then execute the plan. Do not change the plan on the ground unless there is something to be gained by that change—significant gain. Changing for the sake of change only upsets the dynamics and momentum of the operation.

IDENTIFYING SNIPER TARGETS

185. The sniper must be skilled in identifying command armoured fighting vehicles (AFVs), and command rank and unit insignia, of allied and foreign armies. The sniper then can quickly

and accurately select the key target which would do the greatest harm to the enemy in the given situation.

KEY TARGETS

186. Key personnel targets can be identified by actions or mannerisms, positions within formations, rank badges and insignias, and equipment being worn or carried. Key targets can also include weapon systems and equipment. Examples of key targets are:

a. **Snipers**. Snipers are the number one target of a sniper team. The enemy sniper not only poses a threat to friendly forces, he is the natural enemy of the sniper, and can stalk the sniper on his own terms. The fleeting nature of a sniper is reason enough to engage him because you may never see him again.

b. **Dog Tracking Teams**. Dog tracking teams pose a great threat to sniper teams and other special teams that may be working in the area. It is very hard to fool a trained dog's nose, therefore the dog team must be stopped. When engaging a dog tracking team, the sniper should engage the dog's handler first. This confuses the dog, who may not be controllable by other team members.

c. **Scouts**. Scouts are keen observers and provide valuable information about friendly units. This plus their ability to control indirect fires make them very dangerous on the battlefield. They must be eliminated.

d. **Officers (Military and Political)**. Officers are another key target of the sniper. Losing key officers in some forces is such a blow to their operating capability that they may not be able to make a coordinated effort for hours.

e. **NCOs**. Losing NCOs not only affects unit operations, but also affects the morale of lower ranking personnel.

f. **Vehicle Commanders and Drivers**. Many vehicles are rendered useless without a commander or driver.

g. **Communications Personnel**. In some forces, only highly skilled personnel know how to operate various types of radios. Eliminating these personnel can be a serious blow to enemy communications.

h. **Weapon Crews**. Eliminating weapon crews reduces the amount of fire on friendly troops.

i. **Optics on Vehicles**. Personnel who are in closed vehicles are limited to viewing through optics. The sniper can blind a vehicle by damaging optics.

j. **Communication and Radar Equipment**. The right shot in the right place can completely ruin a tactically valuable radar or communication system. Plus, only highly trained personnel may attempt to repair these systems in place.

Eliminating these personnel may seriously degrade enemy field repair capabilities.

k. **Weapon Systems**. Many high tech weapons, especially computer guided type systems, can be rendered useless by one well placed round in the guidance control part of the system.

l. **Anti-materiel**. Employing a Long Range Sniper Weapon System LRSW and mission specific munitions, the sniper becomes a brutally effective force multiplier. Valuable battlefield targets such as rockets, missiles, fuel and ammunition dumps become easy prey for the sniper.

FACTORS IN KEY TARGET SELECTION

187. When selecting key targets the sniper's mission will be the determining factor, however he must consider the following:

a. **Threat to the Sniper**. The sniper must consider the danger the target presents. This can be an immediate threat, such as enemy walking into the sniper's position, or a future threat, such as enemy snipers or tracking dog teams.

b. **Probability of First Round Hit**. The sniper must determine the chances of hitting the target with the first shot by considering the following:

(1) distance to the target;

(2) wind direction and velocity;

(3) visibility of the target area;

(4) amount of the target that is exposed;

(5) amount of time the target is exposed; and

(6) speed and direction of target movement.

c. **Certainty of Target's Identity**. The sniper must be certain that the target he is considering is indeed the key target that he wants.

d. **Target's Impact on the Enemy**. The sniper must consider what impact the elimination of the target will have on the enemy's fighting ability. The sniper must determine that the target is the one available target that will cause the greatest harm to the enemy.

e. **Enemy's Reaction to Sniper Fire**. The sniper must consider what the enemy will do once the shot has been fired. Snipers must be prepared for such actions as immediate and violent suppression by direct and indirect fires, and possibly enemy sweeps of the area.

f. **Effect on the Overall Mission**. The sniper must consider how the engagement will affect his overall mission. The mission may be one of intelligence gathering for a certain period, and firing will not only alert the enemy to a sniper's presence but may also terminate the mission if the sniper has to move from the position as a result of the engagement.

MULTIPLE TARGETS

188. A sniper should carefully weigh the possible consequence of shooting at one of a number of targets, especially when he cannot identify the target in detail. He may trade his life for an inconsequential target by putting himself in a position of a defensive fire-fight. ONLY when a sniper is positively sure his position will not be exposed or detected will he fire more than one shot from any one position. A well placed shot can disable crew served weapons, radios, vehicles, and other equipment. However, such equipment may be used as bait before more targets arrive to assume control of the equipment.

USE OF INDIRECT FIRE

189. Some targets due to their size or location may be better engaged with indirect fire. The sniper may use indirect fire to disguise fire from his position or to help cover his withdrawal after engaging a target. The skill of calling for and adjusting indirect fire must be maintained by the sniper.

INDEXING SNIPER TARGETS

190. When a sniper team is occupying an observation point it may see several targets in a short period of time. The sniper and his observer must remember where each of these is because it is important that the key target be engaged first. Indiscriminate firing at a distant target may also alert an enemy who is closer to the sniper's position. The position of each target should be remembered in relation to a reference point and should be marked on the range card if time allows. Once indexing is complete targets can be engaged in order of priority.

PRIORITIZING SNIPER TARGETS

191. Once a sniper has identified and indexed the key targets available, and considered all the facts in target selection, he must then prioritize the key targets he has selected for engagement. Targets must be engaged according to their value, e.g. an artillery observation officer killed by a sniper will hinder the enemy's plan more than the killing of a rifleman.

CHAPTER 6
CONDUCT OF EXERCISES

SECTION 1
GENERAL

PURPOSE

1. Exercises and range practices are designed to give the sniper the experience needed to meet and maintain qualification standards. These exercises and range practices can be used for initial training of sniper students, or for continuation training of qualified snipers, either as a refresher course or during section training.

2. Pass standards for final exercise and range practice tests are the same as those used throughout training. In addition, final tests are conducted the same way as all exercises and practices.

OUTLINE

3. **Exercises**. The sniper will take part in the following types of exercises:

   a. Kim's game;

   b. spoor lane;

   c. judging distance;

   d. observation exercises;

   e. concealment;

   f. tracking;

   g. stalking; and

   h. field training exercises.

4. Stalking exercises may be conducted with live or blank rounds. At least four exercises should be conducted with live rounds during the sniper course.

5. **Range Practices**. The sniper will take part in both conventional range and field firing range practices by day and by night.

6. **Tests**. Sniper qualification tests encompass all exercise subjects and range practices, plus a written sniper knowledge test.

SECTION 2
KIM'S GAME

AIM

7. The aim of Kim's Game is to practice the sniper's ability to observe an area to gather information and intelligence, and to accurately record the information.

BACKGROUND

8. Kim's Game dates back to the days of the British Empire in India and the use of spies and secret messengers. It is a literary reference to Rudyard Kipling's novel, Kim. . This technique was further developed by the Canadian Army to train snipers in observation and recall. It is used today in military schools around the world to train snipers to observe situations for short periods of time, extracting as much detailed information as possible, and recalling and recording the event accurately for future use.

PROCEDURES

9. Kim's Game generally consists of twelve variable items that are military in nature. Generally, these items are placed on a table and covered with a blanket or cloth:

a. Snipers gather around the table and observe the objects when uncovered.

b. Snipers cannot touch the items, or talk or write anything down during the entire exercise.

c. After a prescribed amount of time, the items are covered again and snipers record their observations on an answer sheet. Snipers describe each object using the following categories:

(1) **Appears to be (ATB)**. The sniper describes what the object appears to be, such as an AK-47 round, radio handset, scope, etc.

(2) **Colour**. The sniper records the colour of the object.

(3) **Condition**. The sniper describes the object by giving the general or unusual condition of the object, such as new, old, dented, etc.

(4) **Shape**. The sniper describes the object by giving the shape, such as round, square, oblong, etc.

(5) **Size**. The sniper describes the object by giving the approximate dimensions in a known unit of measure or in relation to a known object

d. There is a time limit on recording as well. Snipers must thus write essential details that describe the object accurately, without using unnecessary words which will use up recording time.

e. At the end of this time limit, answer sheets are handed in and each item is identified by the instructor.

VARIATIONS

10. There are many variations that can be incorporated into Kim's Game such as:

a. extending the amount of time between observing and recording;

b. varying the time limits on observing or recording or both;

c. incorporating external distractions into the exercise while snipers are observing or recording;

d. using different methods to display the items:

(1) under blanket;

(2) slide show;

(3) pictures; and

(4) using a person as the observation object:

(a) when using a person, this individual must be carrying or wearing 12 identifiable military related items;

(b) items range from identifiable utility tops and bottoms, to boots that are camouflaged to look different than usual, to weapons and equipment;

(c) this exercise is particularly good for identification of threat insignias, uniforms, and weapons; and

(d) this exercise may be staged so that the individual enters the classroom quickly to create confusion and surprise, and leaves the classroom abruptly after a predetermined time limit, thus testing the sniper's ability to recall information under pressure.

EVALUATION

11. Snipers receive a ½ point for a basic description of an item and a ½ point for either recording the exact identification of the item or a sufficiently detailed description, using the categories discussed above. The total possible score is 12 points, with the pass being 9/12:

a. The description must satisfy the instructor to the extent that the information provides enough detail that he would be able to identify the object if he had never seen it before.

b. Experience in the exercise, time constraints, and the complexity of the exercise will determine a pass for each item. This is a judgement by the instructor, based on his own experience in Kim's Games. However, care should be taken to remain as objective as possible.

c. If several games will be conducted, the first few games should be graded strictly, emphasizing the inclusion of details. When snipers are familiar with the game pattern changes can be made.

SECTION 3
SPOOR LANE

AIM

12. The aim of a Spoor Lane is to practice the sniper's ability to observe an area to gather information and intelligence, and to accurately record the information.

BACKGROUND

13. The Spoor Lane has been in use for a few years in military schools around the world to train personnel in tracking courses to interpret spoor. The Canadian Army has recently started to use the Spoor Lane technique to train snipers and reconnaissance patrolmen in spoor interpretation.

PROCEDURES

14. A Spoor Lane is generally conducted in a suitable area, such as a sand pit, where the sniper will be able to see a set of prints and be able to interpret spoor indicators.

a. The instructor requires the following equipment to prepare the exercise:

(1) rake;

(2) mine tape; and

(3) tape measure.

b. The instructor briefs the snipers on:

(1) a scenario;

(2) the way the exercise will be conducted; and

(3) the time they have for the exercise.

c. While two snipers are interpreting the spoor, other participating snipers are held in a different area where they cannot see the spoor.

d. Snipers cannot speak to each other, touch the spoor, or walk on it during the entire exercise, however they can take notes of what they are seeing.

e. After a prescribed amount of time, the sniper describes to the instructor his interpretation of the spoor, using the following categories:

(1) size of the enemy element;

(2) number of persons involved;

(3) type of foot prints (panama, heel, etc.);

(4) direction of movement;

(5) speed of movement; and

(6) action taken by the enemy.

f. When the two snipers are done they move to a different area, so they cannot speak with the other snipers in the holding area.

g. At the end of the exercise, the instructor describes the actual enemy scenario depicted.

VARIATIONS

15. Variations that can be incorporated into a Spoor Lane and this may include using different scenarios to display the spoor, e.g.:

a. portraying enemy with physical disabilities;

b. portraying enemy carrying weight;

c. varying speed and method of movement; and

d. disguising tracks.

EVALUATION

16. Snipers receive points for determining the following (note that * denotes an essential assessment factor which must be achieved to pass):

a. size of the enemy element (2 points);

b. number of personnel involved (2 points);

c. type of foot prints (4 points);

d. direction of movement (*4 points);

e. speed of movement (2 points); and

f. action taken by the enemy (4 points).

17. The total possible score is 18 points, with the pass being 12/18.

18. The spoor interpretation of the sniper must satisfy the instructor to the extent that the information provides enough detail that he would be able to start a follow-up.

NOTE

There are more scenarios. Use your imagination.

END EXERCISE DRILL

19. The drill to end a Spoor Lane exercise is as follows:

a. account for all stores and equipment;

b. account for all ammunition if applicable;

c. clear all weapons;

d. ammunition declarations from all participants if applicable;

e. end brief to include the following:

(1) instructor's debrief on sniper performance; and

(2) sniper critiques on what they learned.

20. When exercises are too difficult or too easy, snipers receive little or no value from the training. It is important that exercises are planned with progressive difficulty, and are realistic and challenging. When planning, consider the average ability of the trainees.

SECTION 4
JUDGING DISTANCE EXERCISE

AIM

21. The aim of this exercise is to make the sniper proficient in accurately judging distance.

DESCRIPTION

22. Snipers will be taken to a position of observation where objects over distances of up to 1000 m are indicated. After time for consideration, the sniper writes on a card the estimated distance to each object. The sniper may use binoculars, rifle telescopic sight, map and compass as aids, and must estimate to within 5 % of the correct range.

RECONNAISSANCE BY THE CONDUCTING OFFICER OR NCO

23. The area to be used must adhere to the following criteria:

a. area adequate to contain 10 objects or targets at varying ranges from 100 to 1000 m;

b. objects or targets should be spread out on variable terrain (rolling ground, uphill, downhill, etc.);

c. all objects or targets can be viewed from the prone position; and

d. the position of observation is clearly marked and can accommodate all snipers taking part in the exercise.

ADMINISTRATIVE REQUIREMENTS

24. To set up the judging distance exercise the instructor must ensure the following:

a. **Training Area**. Areas should be requested early and confirmed at a later date.

b. **Transport**. When requesting transport consider:

(1) number of staff for the exercise;

(2) number of snipers;

(3) number of demonstration troops;

(4) advance party and main body; and

(5) stores and equipment.

c. **Rations**. Not normally required for this type of exercise unless it is one of a series of training exercises within the day's training.

d. **Frequencies**. Two exercise frequencies are required. It is advisable to request an alternate frequency. Range Control for Canadian training areas is normally 49.90 but this should be confirmed in local range standing orders prior to the training event.

e. **Stores**. The following stores are required:

(1) applicable 1:50,000 map;

(2) compass;

(3) notebook and pencil;

(4) calculator;

(5) trainee evaluation checklist;

(6) Vector LRF;

(7) GPS;

(8) 10 x targets/objects;

(9) 4 x demonstration troops;

(10) 5 lb mallet/sledge;

(11) 6 x radio (522 set complete);

(12) 6 x Motorolas with AA batteries;

(13) mine tape; and

(14) range standing orders and daily range standing orders.

SET UP OF THE JUDGING DISTANCE EXERCISE

25. To set up the judging distance exercise the instructor must ensure that:

a. all ranges to objects or targets are confirmed with the laser range finder (if unavailable, by pace cord);

b. the exercise can be conducted with a minimum of two staff members;

c. the exercise can be set up in 1 hour with one staff member and four demonstration troops;

d. the exercise can be conducted within 60 minutes; and

e. range to the closest target may be not less than 100 m, and to the farthest target not more than 1000 m.

CONDUCT OF THE EXERCISE

26. The procedure for conducting a judging distance exercise is as follows:

a. Snipers on arrival at the position of observation are directed to adopt the prone position between clearly defined markers and to lay out their judging distance equipment.

b. The instructor will:

(1) issue the judging distance sheet;

(2) indicate all objects or targets to the satisfaction of each sniper;

(3) give an eight figure grid reference for the exercise location;

(4) explain the procedure for the exercise to include:

(a) The time limit is 3 minutes per target, and will start only when each student has identified the target.

(b) The acceptable bracket allowed is +/- 5%.

(c) Snipers are not allowed to communicate during the exercise. Anyone caught talking or looking at another sniper's paper will be awarded a fail grade.

(d) Scoring system. One point will be awarded for each accurate range to an object or target.

c. Judging distance sheets will be collected and the correct range to each object will then be given. The instructor should point out, in each case, why the distance might be underestimated or overestimated.

STANDARDS

27. Test standards for this exercise are the same as the Basic Sniper Course training package Check List.

END EXERCISE DRILL

28. The drill to end a Judging Distance exercise will be as follows:

a. account for all stores and equipment;

b. account for all ammunition if applicable;

c. clear all weapons;

d. ammunition declarations from all participants if applicable; and

e. end brief to include the following:

(1) instructor's debrief on sniper performance; and

(2) sniper critiques on what they learned.

29. When exercises are too difficult or too easy, snipers receive little or no value from the training. It is important that exercises are planned with progressive difficulty, and are realistic and challenging. When planning, consider the average ability of the trainees.

SECTION 5
OBSERVATION EXERCISES

AIM

30. The aim of Observation Exercises is to enable the sniper to practice locating, identifying and recording items of military equipment using specialized optical equipment. **Observation exercises are to be conducted in both Rural and Urban Environments**.

DESCRIPTION

31. Over a period of not more than 40 minutes the sniper will be given an arc of about 500 mils to observe. He will be issued with a panorama sketch, or given time to draw a panorama sketch, of his arc, and will be expected to plot on the sketch any objects seen in his area. Objects will be so positioned as to be invisible to the naked eye, indistinguishable when using binoculars, but recognizable when using the spotting telescope.

RECONNAISSANCE BY THE CONDUCTING OFFICER OR NCO

32. The area to be used must adhere to the following criteria:

a. Area is adequate for concealing 12 articles of military equipment.

b. Articles of military equipment are to be placed between 30 and 300 m from the observer.

c. The arc of observation does not exceed 500 mils.

d. The position of observation for snipers (prone) is clearly defined and can accommodate all snipers doing the exercise.

e. All articles of military equipment can be seen from the observation position using binoculars, are identifiable using the spotting scope, but are invisible to the naked eye.

f. All articles of military kit are placed so that an explanation as to how or why they have been discarded is credible, e.g. an enemy soldier after resting may have forgotten gloves or magazine.

g. Articles of military kit should, as they are identified and indicated, reveal some military intelligence, e.g. 12 articles such as compass, map, protractor, mortar ammunition box, and aiming stakes would indicate the presence or recent use of the area by an enemy mortar platoon. This could enhance intelligence gathering ability.

ADMINISTRATIVE REQUIREMENTS

33. To set up the Observation Exercise the instructor must ensure the following:

a. **Training Area**. Areas should be requested early and confirmed at a later date.

b. **Transport**. When requesting transport consider:

(1) number of staff for the exercise;

(2) number of snipers;

(3) number of demonstration troops;

(4) advance party and main body; and

(5) stores and equipment.

c. **Rations**. Not normally required for this type of exercise unless it is one of a series of training exercises within the day's training.

d. **Frequencies**. Two exercise frequencies will be required. It is advisable to request an alternate frequency. Range Control will be 49.90 for all training.

e. **Stores**. The following stores are required:

(1) service binoculars, one per trainee;

(2) spotting scope and stand, one per trainee;

(3) clipboard, one per trainee;

(4) panoramic sketch sheets, one per ;

(5) three radios, with at least one able to maintain communications with range control;

(6) 12 military objects;

(7) one assistant;

(8) applicable 1:50,000 map;

(9) range standing orders and daily range standing orders; and

(10) sniper score sheets.

SETUP OF THE EXERCISE

34. To set up the exercise the instructor must ensure that:

a. the task can be set up in 1 hour;

b. two staff members are required to conduct this task;

c. the time for the exercise is 40 minutes;

d. the observation sheet matches the observation area; and

e. should an observation sheet not be available the student is to be given 5 minutes to draw a rough panoramic sketch.

CONDUCT OF THE EXERCISE

35. Students on arrival at the observation position are directed to adopt the prone position between clearly defined markers and to position their observation equipment.

a. The instructor then explains the following:

(1) arc of observation;

(2) time limit;

(3) procedure, to include:

(a) Snipers are divided into two groups. One group observes from the left side of the observation position while the other group observes from the right side. The groups swap positions at the 20 minute point of the exercise.

(b) Snipers are not allowed to communicate with each other during the exercise. Any person caught talking during the exercise will be awarded a failed grade.

(c) The scoring system is ½ point for correct location of article and ½ point for correct identification, with pass being 9/12; and

(d) The instructor issues the observation sheet.

b. When all students report ready, time starts.

c. At the end of 40 minutes time stops and staff collect observation sheets.

d. Staff then point out and name articles for the snipers. This is best done by snipers staying in their positions and watching while a member of the staff points out each object. In this way snipers will see why they failed to find an object even though it was visible.

e. The degree of difficulty of the exercise should be related to the state of training of the sniper. If it is the first exercise, it should be relatively simple, i.e. objects not camouflaged and the whole object visible. On later exercises objects can be camouflaged with only part of the objects being visible.

STANDARDS

36. Test standards for this exercise are the same as the Basic Sniper Course TP Check List.

END EXERCISE DRILL

37. The drill to end the Observation Exercise will be as follows:

a. account for all stores and equipment;

b. account for all ammunition if applicable;

c. clear all weapons;

d. ammunition declarations from all participants if applicable;

e. end brief to include the following:

(1) instructor's debrief on sniper performance; and

(2) sniper critiques on what they learned.

38. When exercises are too difficult or too easy, snipers receive little or no value from the training. It is important that exercises are planned with progressive difficulty, and are realistic and challenging. When planning, consider the average ability of the trainees.

SECTION 6
CONCEALMENT EXERCISES

AIM

39. The aim of a Concealment Exercise is to practice the sniper in individual concealment, and the ability to select a fire position in direct view of the enemy and engage that enemy undetected.

DESCRIPTION

40. The sniper must conceal himself within 300 m of an observer who, using binoculars, will try to find the sniper. The sniper must be able to fire blank ammunition at the observer without being seen, and have the correct elevation and deflection on his sight. The sniper must remain unseen throughout the exercise, even when his position has been pointed out to the observer.

RECONNAISSANCE BY THE CONDUCTING OFFICER OR NCO

41. In choosing the location for the exercise the instructor should ensure that certain conditions are met, as follows:

a. There must be adequate space in order that snipers are not crowded together in the area. There should be at least twice the number of potential positions as there are snipers. Once the area has been established, the limits of it should be marked in some manner (e.g. flags). Snipers should then be allowed to choose any position between the flags, up to a certain distance ahead of or behind the flag line.

b. The observer should be between 150 to 200 m away from the flag line and must be able to observe along the entire length of the line.

42. As there will be several concealment exercises throughout the sniper course and continuation training, a variety of ground should be chosen in order that snipers may practise

concealment in varied conditions. For example, one exercise could take place in a fairly open area, one along a wood line, one in shrubs, and another in undulating terrain.

ADMINISTRATIVE REQUIREMENTS

43. To set up the Concealment Exercise the instructor must ensure the following:

a. **Training area**. Areas should be requested early and confirmed at a later date.

b. **Transport**. When requesting transport consider:

(1) number of staff for the exercise;

(2) number of snipers;

(3) number of demonstration troops; and

(4) advance party and main body.

c. **Ammunition**. 7.62 mm blank ammunition, one round per sniper and one round/sniper as a spare (carried by the walkers).

d. **Rations**. Not normally required for this type of exercise unless it is one of a series of training exercise within the day’s training.

e. **Frequencies**. Two exercise frequencies will be required. It is advisable to request an alternate frequency. Range Control will be 49.90 for all training.

f. **Stores**. The following stores are required.

(1) Five radios (522 set complete).

(2) Four Motorolas with AA batteries.

(3) Two metal folding chairs.

(4) Two service binoculars.

(5) Two traffic vests.

(6) Applicable 1:50,000 map.

(7) Range references such asrange standing orders, daily range standing orders); the weapon publication and ranges and training safety publications.

(8) Evaluation checklist.

(9) Six lettered Figure 14 targets. (Letters will be 11/2 in. wide and 5 in. high. One side of the Figure 14 will have white lettering and the opposite side will have black lettering. The letters used will form the word SNIPER).

CONDUCT OF THE EXERCISE

44. Snipers should be assembled approximately 50 m behind the exercise area, and once the observation post (OP) has been identified should be given 5 minutes to conceal themselves within the specified arc. Not more than 10 minutes is to be given to snipers, at the instructor's discretion, depending on the ground. During this time, the observer will have his back to the exercise area. At the end of 5 to 10 minutes, the observer will make a general sweep of the area. If nothing is seen the following sequence is conducted:

a. The sniper, in a correct fire position and in the aim, identifies the OP and informs the walker when he is ready to fire. The walker informs the OP. The OP then has 2 minutes to locate the sniper. If the sniper is not located, he must then correctly confirm his identification of the OP. This is done by the sniper informing the walker which observer he is aiming at and if he is aiming at the head or chest. The sniper will then be told to standby for indication. The observer will then hold up a figure 14 target for 5 seconds in the location of the sniper's point of aim. If the sniper cannot identify the letter after two attempts, he has failed the exercise. If he is successful he carries on

b. The sniper fires his first blank round.

c. If the sniper remains undetected the walker moves to within 10 m and indicates the general direction of the sniper.

d. If the sniper remains undetected the walker moves to within 5 m of the student (the walker may stand on either side or to the rear 5 m, but not between the OP and the student). If the sniper remains undetected the walker then moves away and tells the sniper to fire his second shot. The sniper must remain undetected.

e. The walker verifies that:

(1) the sniper adopted a correct fire position, with adequate support, so that the trajectory of the round would be clear of any obstacles;

(2) the sniper's elevation is correct for the range and stated point of aim; and

(3) the sniper's deflection is correct for wind conditions, range and point of aim.

f. The sniper returns spent casings to the walker.

45. To be successful on a Concealment Exercise the student must complete 5/8 of the above sequence.

46. The exercise should be conducted as often as scheduling allows, using new areas each time.

47. If a sniper is discovered, for any reason, during the exercise, the observer must inform him (via the walker's radio) what gave his position away. In this way, the sniper will learn from his mistakes. For a detection to be valid, the observer must direct the walker on to the detected sniper, such that he can touch either the sniper or a piece of his equipment.

48. At the end of the exercise the staff must give a critique on major problem areas.

CREATING INTEREST

49. To create interest and give snipers practice in observation, one half of the group may be positioned with the observer in order that they can profit from the mistakes of the other half.

END EXERCISE DRILL

50. The drill to end a Concealment Exercise will be as follows:

a. account for all stores and equipment;

b. account for all ammunition if applicable;

c. clear all weapons;

d. ammunition declarations from all participants if applicable;

e. end brief to include following:

(1) instructor’s debrief on sniper performance; and

(2) sniper critiques on what they learned.

51. A well planned, prepared and executed concealment exercise provides the sniper an excellent learning vehicle prior to stalking.

SECTION 7
TRACKING EXERCISES

AIM

52. The aim of Tracking Exercises is to practice the sniper in following spoor, either to engage or to gather information on the enemy without being observed.

DESCRIPTION

53. Snipers on a Tracking Exercise must initially determine the five essential elements of information (EEI), which are:

a. ascertain the correct spoor;

b. assess the number of personnel involved;

c. record spoor patterns;

d. determine the initial direction of flight; and

e. assess the age of spoor.

54. Snipers must then track for a distance of 1500 to 2000 m, with a suggested time limit of 3 hours. Snipers will work as a detachment or a team, and must rotate from tracking to engage enemy forces after contact has been made.

RECONNAISSANCE BY THE CONDUCTING OFFICER OR NCO

55. The area used for a Tracking Exercise must be chosen with great care. An area which allows a sniper to follow ground spoor, aerial spoor and signs must be chosen. The following limitations should be applied:

a. area selected at least 1500 m in length;

b. area selected has suitable ground to leave spoor for the start point;

c. snipers can be briefed and commence follow-up in the same area;

d. boundaries should be identifiable by natural features if possible;

e. the area can be set up in 40 min; and

f. the Tracking Exercise can be completed within 3 hours including debriefing.

56. The area to be used must be validated by a qualified sniper detachment commander or advanced sniper to confirm that the expected tracking standard can be achieved in the area selected within the specified time limit.

ADMINISTRATIVE REQUIREMENTS

57. To set up the Tracking Exercise the instructor must ensure the following:

a. **Training Area**. Areas should be requested early and confirmed at a later date.

b. **Transport**. When requesting transport consider:

(1) number of staff for the exercise;

(2) number of snipers;

(3) number of demonstration troops; and

(4) advance party and main body.

c. **Ammunition**. Depending on the scenario blank ammunition may be issued.

d. **Rations**. Not normally required for this type of exercise unless it is one of a series of training exercises within the day's training. Ensure water is available for snipers at the completion of the exercise.

e. **Frequencies**. Two frequencies are required. It is advisable to request an alternate frequency. Range Control will be monitored on 49.90 for all training.

f. **Stores**. The following stores are required:

(1) one radio (522 set complete) per detachment/team;

(2) applicable 1:50,000 map;

(3) range references such as standing orders, and daily range standing orders;

(4) service binoculars, one per detachment/team;

(5) tape measure;

(6) Vector LRF;

(7) GPS;

(8) C3A1 and C7; and

(9) two instructors (minimum), with one per group.

SET UP OF TRACKING AREA

58. A minimum of **one** staff per group is required to conduct the exercise:

a. one instructor per group (trained sniper detachment commander equipped with a radio); and

b. set one line of departure per two groups and send off in opposite directions.

CONDUCT OF THE EXERCISE

59. The procedure for conducting the exercise is as follows:

a. A warning order for the Tracking Exercise will be issued one day in advance, including six figure grid references of the last known spoor.

b. Snipers are **not** allowed to physically inspect or reconnoitre the area. In the assembly area the instructor will brief the snipers, to include:

(1) safety;

(2) the standard required to pass the performance check;

(3) any sniper who loses the spoor must be able to apply the lost spoor procedure;

(4) snipers rotate within the detachment/team in order to practice all positions; and

(5) the scenario for the tracking exercise.

c. On completion of the briefing snipers will be informed they have 10 minutes to determine the five essential elements of information. At the end of 10 minutes, snipers will be informed that time has started and they are to commence the follow-up.

d. One instructor will be with the tracking team and one with the enemy group.

e. Snipers will work as a detachment or team, and must rotate from tracking to engage the enemy after contact has been made.

END EXERCISE DRILL

60. The drill on completion of the Tracking Exercise will be as follows:

a. account for all stores and equipment;

b. account for all ammunition if applicable;

c. clear all weapons;

d. ammunition declarations from all participants if applicable; and

e. end brief, to include the following:

(1) instructor's debrief on sniper performance; and

(2) sniper critiques on what they learned.

61. When exercises are too difficult or too easy, snipers receive little or no value from the training. It is important that exercises are planned with progressive difficulty, and are realistic and challenging. When planning, consider the average ability of the trainees.

SECTION 8
STALKING EXERCISES

AIM

62. The aim of Stalking Exercises is to practice the sniper in the use of ground to approach, occupy a fire position, engage the enemy, and withdraw without being observed.

DESCRIPTION

63. Having studied a map and air photographs, individual snipers must stalk for a distance of 1000 to 1500 m, within a suggested time limit of 3 hours. The sniper must stalk to within 150 to 300 m of two stationary observers who will be searching for him with binoculars. The sniper must then engage the observers and withdraw 100 m undetected.

RECONNAISSANCE BY THE CONDUCTING OFFICER OR NCO

64. The area used for a stalking exercise must be chosen with great care. For example, an area in which a sniper would have to leopard crawl for the complete distance would be unsuitable. The following limitations should be applied:

a. area selected at least 1000 m in length;

b. the observer has effective observation over the area where the stalk is being conducted;

c. the area selected has good cover for the first portion of the stalk, with cover becoming sparse as the sniper nears the firing area (within 300 m of the observer);

d. the sniper can be briefed and commence the stalk in an area out of sight of the observer;

e. the boundaries should be identifiable by natural features if possible;

f. the area selected conforms to the requirements of B-GL-381-001/TS-000 *Training Safety* if live rounds are to be fired;

g. the area can be set up in 40 minutes;

h. the stalk can be completed within 3 hours; and

i. there is an area near the stalk area with a 300 m range for snipers to check zero of their rifles (for live fire stalking).

65. The area to be used must be validated by a qualified Sniper Instructor to determine that the expected stalking standard can be achieved in the area selected within the specified time limit.

ADMINISTRATIVE REQUIREMENTS

66. To set up the Stalking Exercise the instructor must ensure the following:

a. **Training Area**. Areas should be requested early and confirmed at a later date.

NOTE

If conducting a live fire stalk, you must include a danger area trace.

b. **Transport**. When requesting transport consider:

(1) number of staff for the exercise;

(2) number of snipers;

(3) number of demonstration troops; and

(4) advance party and main body.

c. **Ammunition**. Three 7.62 mm blank ammunition rounds per trainee (two rounds for the exercise and one round spare, carried by the walkers). If a live stalk, two 7.62 mm Norma match rounds are required per student.

d. **Rations**. Not normally required for an exercise of this type unless it is one of a series of training exercises within the days' training. Ensure water is available for the students at the completion of the stalk.

e. **Frequencies**. Two exercise frequencies are required. It is advisable to request an alternate frequency. Range Control will be 49.90 for all training.

f. **Stores**. The following stores are required:

(1) Five radios (522 set complete).

(2) Applicable 1:50,000 map.

(3) Two metal folding chairs.

(4) Range references (range standing orders, daily range standing orders, B-GL-381-001/TS-000 *Training Safety* ,B-GL-392-005/FP-001 *Sniping*.

(5) Two service binoculars.

(6) Trainee evaluation checklist.

(7) Two traffic vests.

(8) Six lettered Figure14 targets. (Letters will be 11/2 in. wide and 5 in. high. One side of the Figure 14 will have white lettering and the opposite side will have black lettering. The letters used will form the word SNIPER).

(9) Ammunition.

(10) Two observers.

(11) Two walkers (minimum).

(12) If live:

(a) one range safety officer;

(b) two blank and two 7.62 Norma Match rounds per student;

(c) safety flags;

(d) two Figure 11 targets with the kill zone superimposed on them;

(e) two large steel targets with the same dimensions as the kill zone on a figure 11 target;

(f) target patches;

(g) range safety stores per unit policy; and

(h) two spotting scopes with tripods and 40 power lens adapters.

SET UP OF STALK AREA

67. A minimum of four staff members is required to conduct the exercise. The area will be set up as follows:

a. two observers in an observation post (each a trained sniper equipped with a radio and binoculars);

b. two walkers each equipped with a radio (more walkers may be required, depending on the manoeuvre area);

c. walkers must be clearly identified by coloured bands or vests;

d. the observation post should be visible for the first stalk, but the level of camouflage is to progressively increase from stalk to stalk thereafter;

e. the area of observation may be divided in half with a separate frequency issued for the exclusive use of the walkers; or, one common frequency may be used, with an alternative for dealing with two snipers simultaneously; and

f. the targets to be used for live firing should be the large steel targets.

CONDUCT OF THE EXERCISE

68. The procedure for conducting the exercise is as follows:

a. A warning order for the stalk will be issued one day in advance, including a current air photograph of the area if available. The warning order will include a six figure grid reference of the observation post position and the direction of advance.

b. Snipers are not allowed to physically inspect or reconnoitre the area. In the assembly area the walkers will brief snipers, including the following:

(1) safety;

(2) the standard required to pass the performance check;

(3) recommencing the stalk if observed;

(4) the procedure up to and including the firing of blank rounds;

(5) the procedure for firing live rounds;

(6) the required accuracy of the strike and the return stalk to 100 m; and

(7) time to confirm the zero of their rifles, if required.

c. On completion of the briefing snipers will be given two rounds of blank ammunition and informed they have 10 minutes to complete last minute preparations. At the end of the 10 minutes, snipers will be informed that time has started and they are to commence the stalk.

d. For a live fire stalk the sniper's position will be checked by firing a live round. For a dry stalk the walkers will determine if the position is effective or not. The Range Conducting Officer, who is also a walker, will carry a box of live rounds, and will account for all live rounds and empty casings.

e. One walker will conform to the movements of the fastest stalker, staying at least 50 to 100 m in rear. The remaining walker(s) will conform to the movements of the main pack of stalkers.

f. In conforming to the movements of the stalkers, walkers must not compromise the position of any stalker. If a stalker's position has been compromised by a walker, the stalker will be allowed to restart at any point already passed in the manoeuvre area, and have any lost time reinstated.

g. Observers must observe their portion of the arc with the naked eye or binoculars (**not a spotting scope**) while correctly sitting upright on a metal folding chair (e.g. not resting elbows on the back rest or on a stable platform like a table).

h. Any sniper who is observed and located by the observers will be informed, through the walker, of the reason for being observed and located, and his score will stand at that point on the checklist. The sniper will, at that point, be removed from the stalk with the exception of:

(1) Any sniper who is observed and located by the observers but is not yet within 300 m of them will be ordered to return to the start position and recommence the stalk. The sniper will not receive any points for the stalk but is given the opportunity to practice the skill rather than lose the training time.

(2) Any sniper who is observed and located by the observers within 300 m, but has not yet fired his first blank round, will be ordered to move to the rear a minimum of 300 m and recommence the stalk. The score will stand at the point at which he was observed and located, and he will be given the opportunity to practice the skill.

(3) No sniper will be permitted more than one opportunity to recommence the stalk per exercise.

i. If a sniper is seen, observers must be able to direct the walker on to the sniper's position such that either the sniper or a piece of his equipment can be touched. If the observer fails to move the walker on to the sniper after two attempts, the sniper is free to continue the stalk. An "attempt" is defined as a declaration of **YOU ARE TOUCHING A SNIPER** to the walker.

j. When the sniper has stalked to within 300 m of the observation post (OP) he tells the walker that he is ready to fire. The walker informs the OP that he has a sniper ready to fire. The OP has 2 minutes to observe. If the sniper is not seen the walker confirms who the sniper is firing at and where (e.g. head or chest). The sniper is then told to stand by for identification. The observer will then hold up a figure 14 target for 5 seconds in the location of the sniper's point of aim. If the sniper cannot identify the OP after two attempts he has failed the stalk. If he correctly identifies the OP then he is told to fire a blank round at the OP.

k. When the blank round is fired the OP has 2 minutes to observe for the sniper and identify him if he is visible.

l. If the sniper is not seen, the OP informs the walker to stand within 10 m of the sniper and indicate his general direction by raising his arm and pointing.

m. If the sniper is still not seen the OP informs the walker to move within 5 m.

n. If still undetected the OP informs the walker to move away and have the sniper fire his second blank round.

o. If undetected the walker will confirm the sniper's fire position, line of sight, sight setting and wind allowance, and award points accordingly. The sniper number is sent to the OP and the sniper is ordered to commence his stalk out.

FIRING A LIVE ROUND

69. The procedure for a live fire stalk is identical to that of a dry stalk up to the point where the sniper fires his second blank round. At this point the walker records the sniper number, position and sight settings. The sniper is then required to simply wait until the rest of the snipers complete their firing procedure or the time limit is called. The conduct of the exercise is then as follows:

a. The walker will inform the OP that all students have progressed to the point of firing a live round.

b. The walkers will inform the OP to place targets, and will have all students identify their position by raising an arm, kneeling, sitting, standing, etc. No live fire will take place until all students are accounted for.

NOTE

Students will not be compromised for flash.

c. The walker who processed the sniper must confirm the sight settings and position of the individual. The only change permitted in this set up is in deflection since wind speed may have changed.

d. Any students in the danger area must be withdrawn. The Range Conducting Officer (RCO) must assert positive control and confirm that everyone is clear of the danger area prior to issuing live rounds to the sniper. Stalkers not in the danger area are to remain in position (those who must move may mark their position with a numbered tag or a piece of sniper equipment like a glove, pull-through, oil bottle, etc.).

e. The OP must place a target in position exactly where they were, raise the red flag, move to the firing position and set up to observe the strike of the round. The best

target system to use for this type of exercise is the large steel gong in a frame or Figure 11/59, however both targets have to be kill zone size.

f. The RCO will issue the student closest to the OP one live round.

g. If firing at a gong target the RCO will tell the sniper to fire once the spotting scopes are set up and ready to observe. Once the sniper has fired, the sniper will be informed that he hit, or that he missed and FAILED the stalk. The walker will prove the weapon safe and direct the sniper to move out of the danger area, ensuring his position is marked if necessary.

h. If firing at Figure 11/59 targets the RCO will issue the sniper a single round and give the command to fire. Once the sniper has fired, the weapon will be cleared and the target scored and patched. The sniper will be informed that he hit, or that he missed and FAILED the stalk.

i. Any sniper who has FAILED will be so informed and will be directed to return to the assembly or waiting area.

j. On completion of firing the range will go dry, and all snipers who hit the target will be directed to re-occupy their positions while observers set up for the stalk out.

k. When snipers and observers are back in position the 100 m stalk out will commence.

CONTROL OF LIVE FIRE POSITION

70. Suggested method of controlling the firing line is to mark a final approach line with left and right boundaries, allowing the sniper to select a position within 150 to 300 m of the OP. The walkers, who are the safety officers, must maintain control during this phase.

END EXERCISE DRILL

71. End exercise drills will be as follows:

a. account for all stores and equipment;

b. account for all ammunition if applicable;

c. clear all weapons;

d. ammunition declarations from all participants if applicable;

e. end brief to include the following:

(1) instructor's debrief on sniper performance; and

(2) sniper critiques on what they learned.

NOTE
This information indicates defensive preparations, which may present the sniper with targets of greater military importance in the near future.

72. Stalking is one of the primary skills of the sniper and should be practiced, both live and blank, as often as possible. When exercises are too difficult or too easy, snipers receive little or no value from the training. It is important that exercises are planned with progressive difficulty, and are realistic and challenging. When planning, consider the average ability of the trainees.

SECTION 9
OBSERVATION TASK EXERCISE

AIM

73. The aim of this exercise is to enable the sniper to practice the following:

a. identifying and indicating sniper targets;

b. indexing and prioritizing sniper targets; and

c. maintaining a sniper observation log during tactical field conditions.

RECONNAISSANCE BY THE CONDUCTING OFFICER OR NCO

74. The area to be used must adhere to the following criteria:

a. location adequate for observing 12 enemy activities or items of military equipment;

b. activities occur from 200 to 1000 m from the observation post (OP) location;

c. items are placed so that they are identifiable from the prone position using available sniper optics;

d. arc of observation will not exceed 500 mils;

e. activities are to occur at irregular timings throughout the observation task;

f. all articles are appropriate to the activities depicted; and

g. in order to reveal some type of military intelligence, enemy activities are to occur in a logical sequence, such as:

(1) vehicle patrol;

(2) foot patrol;

(3) advance party reconnoitring a position;

(4) siting trenches; and

(5) occupying a position.

SETUP OF THE EXERCISE

75. To set up the exercise the instructor must ensure that:

a. activities are rehearsed prior to conducting the exercise; and

b. the task can be completed within 8 hours (2 hours preparation for battle, 2 hours move into location, and 4 hours for the task).

CONDUCT OF THE EXERCISE

76. The procedure for conducting the exercise is as follows:

a. Students are issued the following:

(1) sniper observation log book;

(2) brief tactical scenario;

(3) enemy grid location; and

(4) the general area the snipers are to select a position of observation.

b. The task instructor explains:

(1) the task;

(2) arcs of observation;

(3) time limit;

(4) procedure for the task; and

(5) scoring system.

c. When all students are ready the time will start.

d. Upon completion of the 8 hour time limit the staff will review the exercise.

e. The degree of difficulty of the exercise should be related to the sniper's state of training.

STANDARDS

77. Test standards for this exercise are the same as the Basic Sniper Course TP Check List.

SECTION 10
CONTINUATION TRAINING EXERCISES

GENERAL

78. Sniper continuation training permits the sniper to practice skills under challenging, interesting and realistic conditions. In addition, the training has to be physically and mentally demanding, and progressive. It is important, however, that all tasks given during training be achievable.

PLAN AND CONDUCT SNIPER CONTINUATION TRAINING

79. The conduct of sniper continuation training is the responsibility of the unit Master Sniper and sniper detachment commanders. The sequence of planning this training should be as follows:

a. **Appreciation**:

(1) **Decide the aim of the exercise**. The aim should have a **task** and a **purpose**, e.g. to practice or test snipers in stalking (TASK) in order to train the sniper section for an operational deployment (PURPOSE).

(2) **Decide the training objectives**. What specific skill(s) are required to achieve the aim (e.g. concealment, stalking).

(3) **Conduct a map reconnaissance**. Select suitable areas and produce a reconnaissance plan.

(4) **Conduct a time appreciation**. Estimate your exercise set-up time. Subtract this from the time available and you are left with the time to conduct your exercise. Briefing and debriefing are also included in this time.

(5) **Consider the number of participants**. In order to make best use of your time you may be required to run concurrent activities to keep non-participants busy.

(6) **Consider the skills level of the troops**. What level is the exercise pitched at.

(7) **Consider allocated resources**. What is available to support your exercise? You must have a clear understanding of this before conducting your reconnaissance. If you attempt to be too elaborate without the appropriate administrative backup, your exercise will fail or have little training value for participants.

b. **Points to Consider when Conducting a Reconnaissance**:

(1) **Achievable**. Can the aim, training objectives and training value be achieved by using this area.

(2) **Layout of the exercise**. Identify a datum point, then the exercise area. Site the remaining areas around it.

(3) **Target Siting**. The way in which you represent the enemy on your exercise is crucial. Their actions must be realistic, they must be sited tactically, and you may wish to include a degree of unpredictability. For example, for Tracking, Stalk and Observation Exercises consider where and how enemy items are laid out.

(4) **Distractions**. Avoid areas that have distractions. Assess how to minimize your own distractions (e.g. noisy and untidy administration areas, loitering support staff).

(5) **Troop Routes**. Consider boundaries, possible routes, and freedom of choice to be allowed snipers. Where will they go and what will they do?

(6) **Sketches**. Make detailed notes and sketches.

(7) **Realism**. Keep your scenario as realistic as possible.

(8) **Obstacles**. Plan the use of obstacles in a realistic setting, e.g. a second observation post or probable minefield.

(9) **Your Role**. Remember you are responsible for the overall control of the exercise. Plan where you can best control the exercise from, e.g. for Stalking, as a walker. If you use a role player to give orders ensure he is dressed for the role and rehearsed.

(10) **Layout of the Area**. Once you have found a suitable exercise area, lay out the remainder of the area:

(a) **Administration Area**. Must be easily accessible.

(b) **Battle Preparation Area**. Must be tactically sited and with realistic access to the exercise area. If you have waiting details place them in a waiting area that does not overlook the exercise area.

(c) **Concurrent Activity Areas**. Should be out of site of the main activity.

(11) **Sketch Maps**. Two sketch maps are required:

(a) **General sketch map**. Used to describe the big picture, including the following:

(i) location of each exercise area;

(ii) routes in and out of each area;

(iii) control point (if required); and

(iv) any other general information required.

(12) **Detail sketch map**. Used to detail each exercise. On completion of the detail map ask yourself this question: Can someone else conduct this exercise the way I intended it to be conducted? If your answer is "Yes" your detail map is well prepared. If "No", the map needs to be revised, e.g. made clearer or with more detail. The detail map includes the following:

(a) datum point;

(b) prominent features;

(c) elevation;

(d) line of departure, limit of exploitation, and axis of advance;

(e) obstacles;

(f) direction of North and scale;

(g) battle preparation, administration, waiting and concurrent activities areas;

(h) ammunition point;

(i) control point (if required); and

(j) any other items required.

c. **Administration**. Administrative requirements for continuation training are much as they are for any type of training. If outside resources are required a Training Support Requirement (TSR) or memorandum request will be needed for each of the following:

(1) transport;

(2) rations;

(3) training areas/ranges;

(4) ammunition;

(5) personnel;

(6) communications; and

(7) stores.

PRESENTING A CONTINUATION TRAINING PLAN

80. In order to have your plan approved it may be necessary to produce a formal exercise instruction. The following example provides a format for this instruction:

a. **Covering Memorandum**, including the following:

(1) **Exercise Name**. Exercise One Shot One Kill.

(2) **References**. Map series, B-GL-381-001/TS-000 *Training Safety*, B-GL-392-005/FP-001 *Sniping*, etc.

(3) **General**. A short paragraph to introduce your exercise, which should explain who, what, where, when and why.

(4) **Aim of the Exercise**. A clear statement of the task and its purpose.

(5) **Scope**:

(a) **Scope of the Exercise**. This outlines the activity and gives a general overview as to the overall conduct of the day's training.

(b) **Training Objectives**. This is the main thrust of the exercise, as well as detailing what is being practiced and/or assessed.

(c) **Staff Instruction**. Detailed information to staff covering the conduct of the exercise is contained in a separate annex and not in the covering letter, so that it will not be seen by trainees.

(d) **Safety**. The safety brief is provided in a separate annex.

(6) **Coordinating Instructions**:

(a) organization of activities;

(b) detailed timetable and sequence of events, provided in a separate annex;

(c) location of activities; and

(d) coordinating conference.

(7) **Service Support**:

(a) dress and equipment (for both trainees and staff);

(b) administrative requirements (detail can be provided in a separate annex if required); and

(c) medical.

(8) **Command and Signals**:

(a) overall control of the exercise; and

(b) a communication plan provided as a separate annex.

b. **Annexes**. As noted above, annexes are used either to withhold information from trainees, e.g. detail on conduct of the exercise, or to avoid cluttering the covering memorandum with masses of detail, such as administrative requirements. The staff instruction, safety, and communications annexes should follow a clear, concise and logical format, e.g. the staff instruction could detail tasks by instructor or by function. The following two sub-paragraphs provide a framework for the Timetable and Administrative annexes.

c. **Timetable**. To describe detailed timings and a sequence of events this annex includes in tabular format the following headings: serial, numbering the day (e.g. Day 1, Day 2), the date, timings (e.g. by 40 minute lessons or other appropriate time block), instructor assignments, and remarks. The timetable should be:

(1) realistic;

(2) progressive;

(3) achievable; and

(4) meet the aim.

d. **Administrative Instruction**. The administrative annex should include the following:

(1) **General**. Who is responsible for administrative support to the exercise.

(2) **Requirements**. Separate paragraphs are used for each requirement, i.e.:

(a) weapons;

(b) ammunition;

(c) stores;

(d) transport;

(e) rations;

(f) responsibility for maintaining and processing a nominal roll;

(g) training area and ranges;

(h) personnel and support; and

(i) communications.

(3) Separate appendices can be used for those types of support where a great deal of detail is required.

LARGE-SCALE EXERCISES

81. Snipers can benefit greatly from large-scale tactical exercises conducted at brigade level or higher. Such exercises normally occur at large training establishments, with sufficient time and resources available to conduct collective training for many days if not weeks. This training time coupled with the resources available provide an excellent opportunity for unit sniper sections.

TRAINING LIMITATION

82. Snipers, by virtue of their long range engagement capabilities and their efficient use of concealment, present a problem if not properly umpired. Opposing forces cannot often hear the sniper's fire or realize they are being engaged, and subsequently will not react, thus reducing the training value to both sides.

83. When deploying snipers on large-scale tactical exercises every effort should be made to ensure snipers are credited with engagements by using umpire staff assigned to both snipers and opposing forces. The umpires must have a communication link and should designate battle casualties, thereby forcing units to react to the sniper's fire.

SNIPER CONCENTRATIONS

84. The Canadian International Sniper Concentration is conducted at the Infantry School each year. Its aim is two fold: first, to improve the proficiency of snipers in the Army, and second, to give the sniper community a venue to exchange information and training ideas. Scenarios are realistic and challenge sniper communications and problem solving skills, as well as marksmanship. Common faults are highlighted during debriefs and the exchange of ideas between teams is encouraged. Units are also encouraged to have their snipers participate in foreign sniper concentrations to gain valuable experience and new training methodologies which can be incorporated in their continuation training plan.

OUT OF SERVICE TRAINING

85. Many allied countries and other government agencies conduct excellent basic and master/advanced sniper programs. Every effort should be made to secure vacancies on these courses to augment sniper expertise.

SECTION 11
RANGE PRACTICES

TYPES OF RANGE PRACTICES

86. The sniper will participate in both conventional and field firing range practices by day and by night.

STANDARDS

87. The standards for each range practice are detailed in B-GL-382-001/PT-001 *Shoot To Live*

SAFETY

88. The Range Safety Officer (RSO) must ensure that staff and students comply with the safety limits laid down in B-GL-381-001/TS-000 *Ranges and Training Safety*.

SECTION 12
SNIPER ANNUAL QUALIFICATION STANDARDS

GENERAL

89. Sniper qualification tests are to be conducted at the conclusion of a sniper's training and semi-annually thereafter to ensure that the required standard has been reached and maintained. The standard is necessarily high and reflects the degree of skill required by a sniper. A thorough

knowledge of sniper techniques and flawless ability in their practical application are expected of the sniper.

SUBJECTS

90. Snipers are to be tested in the following subjects:

a. Kim's game;

b. spoor lane;

c. judging distance;

d. observation;

e. concealment;

f. tracking;

g. stalking;

h. field training exercises; and

i. shooting.

91. Tests could be unfairly influenced by local conditions, therefore the sniper may have two attempts to pass the shooting, stalking, judging distance and observation tests.

92. The tests are conducted in the same manner as the applicable exercises described in sections 2 to 8 of this chapter. The sniper must be so informed by the instructor in charge prior to the tests.

CLASSIFICATION STANDARDS

93. Sniper annual classification standards are applicable to qualified snipers. Soldiers undergoing initial sniper training must achieve the standards specified in A-P9-031-S17/PC-B01, OSQ Code AFEA, *Sniping Basic*.

94. Individual classification standards are as follows:

a. **Sniper Qualified**. Pass on all tests.

b. **Failed**. Fails one or more tests.

CONCEALMENT TEST STANDARD

95. **Sniper Qualified**. Passed the concealment test with 8 points.

96. **Failed**. Failed to achieve 8 points.

STALKING TEST STANDARD

97. **Sniper Qualified**. Passed the stalking test with 8 points.

98. **Failed**. Failed to achieve 8 points.

OBSERVATION TEST STANDARD

99. **Sniper Qualified**. Passed the observation test with 9 points.

100. **Failed**. Failed to achieve 9 points.

JUDGING RANGE TEST STANDARD

101. **Sniper Qualified**. Passed the judging distance test with 8 points.

102. **Failed**. Failed to achieve 8 points.

SHOOTING TEST STANDARD

103. **Sniper Qualified**. Must pass parts 1, 2 and 3 of the Conventional Personal Weapons Test (PWT), and parts 1, 2 and 3 of the Field Firing PWT

104. **Failed**. Failed to achieve a pass in any part of either the Conventional or Field Firing PWTs.